

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte, Halifax, Campbell, Pittsylvania
STREAM NAME: Staunton (Roanoke) River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAC-L19R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 83.9 - Miles
INITIAL LISTING: 1998
TMDL SCHEDULE: 2010
UPSTREAM LIMIT:

DESCRIPTION: Leesville Dam

RIVER MILE: 140.02

LATITUDE: 37.09389

LONGITUDE: -79.39972

DOWNSTREAM LIMIT:

DESCRIPTION: Pipeline crossing approximately 5.4 miles downstream of the Route 360 bridge

RIVER MILE: 56.12

LATITUDE: 37.03778

LONGITUDE: -78.99611

Staunton (Roanoke) River mainstem from Leesville Dam downstream to a pipeline crossing approximately 5.4 miles downstream of the Route 360 bridge.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Not Supporting, Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fish Tissue - PCBs, Fecal Coliform (80.46 miles)

The Virginia Department of Health (VDH) has issued a 'Health Advisory' for fishing in this segment of the Staunton (Roanoke) River based on fish tissue analysis. The segment does not support the fish consumption use for Smallmouth Bass, Channel Catfish, Flathead Catfish, Striped Bass, White Bass, and Carp. Fish tissue analysis reveals PCB levels high enough for issuance of an advisory. The VDH advises limiting the amount of fish consumed to two 8 oz. portions per month. Young children and pregnant women are advised not to eat any of these fish. The total VDH 'Health Advisory' extends from Leesville Dam on downstream below Clover, Virginia; 5.4 miles downstream of the Route 360 Bridge. A total length of approximately 84 miles.

Exceedance of the US EPA human health-risk based screening value (SV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) was found during the following sample events:

Below Leesville Dam (4AROA137.00) 1998 4 Species
Route 640 in Campbell Co. (4AROA125.59) 1998 6 Species
Near Taber in Campbell Co. (4AROA117.09) 1998 4 Species & 1999 3 Species
Route 761 in Campbell Co. (4AROA108.09) 1998 6 Species
Route 501 in Brookneal (4AROA097.07) 1998 8 Species & 2002 9 Species
Route 746 in Halifax Co. (4AROA067.91) 1999 3 Species
Route 92 (4AROA059.12) 1998 4 Species & 2002 8 Species

An Observed Effect of the fish consumption use is found within this segment, 22.23 miles from the mouth of the Big Otter River downstream to Buffalo Creek. Exceedances of Heptachlor epoxide from 1999 fish tissue collections at station 4AROA117.09 reveal 3 species above the screening value. Station 4AROA108.09 in Long Island reports exceedances in 2 species. An additional observed effect of the fish consumption use is found within this segment, 10.20 miles from Roanoke Creek to the pipeline crossing approximately 5.4 miles downstream of the Route 360 bridge. Exceedances of Mercury from 2002 fish tissue collections at station 4AROA059.12 reveal 2 species above the screening value.

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Results of fish tissue and sediment sampling from the special PCB ongoing study in the Staunton (Roanoke) River are posted at the DEQ website, <http://www.deq.state.va.us>.

A portion of the Roanoke River segment is not supporting the recreation use to excessive counts of fecal coliform bacteria. The segment extends 80.46 miles from Goose Creek to the pipeline crossing approximately 5.4 miles downstream of the Route 360 bridge. The high counts were recorded at the following stations:

Route 29 Bus. Altavista (4AROA129.55) 4/27 Violation Rate
Route 640 Campbell Co. (4AROA124.59) 2/12 Violation Rate
Route 761 Campbell Co. (4AROA108.09) 2/14 Violation Rate
Route 501 in Brookneal (4AROA097.46) 9/51 Violation Rate
Route 746 in Halifax Co. (4AROA067.91) 4/29 Violation Rate
Route 92 (4AROA059.12) 7/47 Violation Rate

A portion of the Roanoke River segment is fully supporting, but has an observed effect for the aquatic life use. The segment extends 8.08 miles from Buffalo Creek to the Falling River confluence. Elevated levels of PCBs, Chlordane, Total DDT & DDE were found in the sediment during a 1999 sampling event at station 4AROA096.65.

During the 2004 cycle several segments were combined to reflect the entire length of the VDH fishing advisory for PCBs and the 80.46 mile segment impaired for fecal coliform bacteria.

IMPAIRMENT SOURCE: VDH Fish Consumption Advisory, Non Point Source

The exact source(s) of PCB contamination is unknown. One stormwater and one legacy industrial source has been identified in the segment. Investigations to discover potential sources continue as do fish tissue and sediment sampling studies.

The source of fecal coliform bacteria is believed to be non-point source loadings.

The exact source of the Heptachlor epoxide and Mercury is unknown.

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RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Campbell
STREAM NAME: Seneca Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L31R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 9.1 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: West Little Seneca Creek
RIVER MILE: 9.10
LATITUDE: 37.15030 **LONGITUDE:** -79.13120

DOWNSTREAM LIMIT:

DESCRIPTION: Roanoke River
RIVER MILE: 0.00
LATITUDE: 37.09010 **LONGITUDE:** -79.12310

Seneca Creek mainstem from the West Little Seneca Creek mouth downstream to Seneca Creek's confluence with the Roanoke (Staunton) River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Seneca Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. High counts were recorded in 3/26 samples at the Route 704 bridge (4ASEN000.40).

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax, Charlotte, Campbell
STREAM NAME: Falling River
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L34R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 17.92 - Miles
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: Falling River North and South Fork confluence
RIVER MILE: 17.92
LATITUDE: 37.13944 **LONGITUDE:** -78.97083

DOWNSTREAM LIMIT:

DESCRIPTION: Falling River mouth
RIVER MILE: 0.00
LATITUDE: 37.02250 **LONGITUDE:** -78.90444

Falling River mainstem from the North and South Fork confluence downstream to the Falling River mouth on the Roanoke (Staunton) River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Falling River is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 3/26 samples taken at 4AFRV002.78.

2/10 samples taken at 4AFRV010.99.

4/27 samples taken at 4AFRV017.71.

During the 2004 cycle several segments of Falling River were combined into one to reflect the impaired segment from the North and South Fork Falling River confluences to the mouth of Falling River at the Roanoke River.

IMPAIRMENT SOURCE: NPS - Agriculture/Urban

The source of the fecal coliform is agriculture and urban runoff/storm sewers.

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RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Campbell
STREAM NAME: Mollys Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L35R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 1.81 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 17.5
LATITUDE: 37.26680 **LONGITUDE:** -79.09470

DOWNSTREAM LIMIT:

DESCRIPTION: Backwaters of a pond
RIVER MILE: 15.69
LATITUDE: 37.25030 **LONGITUDE:** -79.08830

Mollys Creek mainstem from its perennial headwaters downstream to a pond's backwaters. Mollys Creek mainstem from its perennial headwaters downstream to a pond's backwaters.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Mollys Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. High counts were recorded in 7/26 samples at 4AMEY016.00.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte
STREAM NAME: Turnip Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L36R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.7 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Buck Branch
RIVER MILE: 2.70
LATITUDE: 37.01500 **LONGITUDE:** -78.85167

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth at Roanoke River
RIVER MILE: 0.00
LATITUDE: 36.98389 **LONGITUDE:** -78.84361

Turnip Creek from Buck Branch downstream to its mouth at the Roanoke River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Turnip Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 8/28 samples taken at 4ATIP002.55.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte
STREAM NAME: Cub Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L37R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 14.21 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Big Cub Creek
RIVER MILE: 22.51
LATITUDE: 37.20389 **LONGITUDE:** -78.73444

DOWNSTREAM LIMIT:

DESCRIPTION: Terrys Creek
RIVER MILE: 8.30
LATITUDE: 37.06167 **LONGITUDE:** -78.74361

Cub Creek from Big Cub Creek to Terrys Creek

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Cub Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 8/21 samples taken at 4ACUB010.96.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte
STREAM NAME: Ash Camp Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L39R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 7.46 - Miles
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 7.46
LATITUDE: 37.03611 **LONGITUDE:** -78.58472

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 37.03806 **LONGITUDE:** -78.60056

Ash Camp Creek from the its headwaters to its mouth at Roanoke Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting, Recreation Use - Not Supporting

IMPAIRMENT CAUSE: General Standard (Benthic) (1998), Fecal Coliform (2004)

Ash Camp Creek was assessed not supporting of the Aquatic Life use support goal based on a moderately impaired benthic assessment 50 yards below Keysville STP (4AACC007.62), as well as a slightly impaired benthic assessment at the Route 654 bridge (4AACC007.62).

Ash Camp Creek is also assessed as not supporting of the recreation use due to excessives counts of fecal coliform during the 2004 cycle. High counts were recorded in 4/7 samples taken at 4AACC002.60 and in 2/6 samples taken at 4AACC004.87.

IMPAIRMENT SOURCE: PS - Municipal, Unknown

The impairment in this segment is attributed to siltation from a municipal point source in the segment.

The source of the fecal coliform is considered unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte
STREAM NAME: Twittys Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L39R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 7.25 - Miles
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: WestPoint Stevens-Drakes Discharge
RIVER MILE: 7.25
LATITUDE: 36.99583 **LONGITUDE:** -78.59667

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 36.92639 **LONGITUDE:** -78.66667

Twittys Creek from WestPoint Stevens-Drakes discharge downstream to its mouth at Roanoke Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: General Standard (Benthic)

Segment was assessed not supporting of the Aquatic Life use support goal based on a moderately impaired biological assessment for the 2004 305(b) cycle at 4ATWT006.40 (below Westpoint Stevens discharge) and at 4ATWT003.36 (below Drakes Branch STP).

IMPAIRMENT SOURCE: PS - Municipal, PS - Industrial

The impairment is attributed to siltation from municipal and industrial point sources in this segment.

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RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte
STREAM NAME: Horsepen Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L39R-03
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 1.84 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Little Horsepen Creek
RIVER MILE: 3.48
LATITUDE: 36.91972 **LONGITUDE:** -78.63972

DOWNSTREAM LIMIT:

DESCRIPTION: Reynolds Creek
RIVER MILE: 1.64
LATITUDE: 36.90250 **LONGITUDE:** -78.65833

Horsepen Creek from Little Horsepen Creek downstream to Reynolds Creek

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Horsepen Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 3/25 samples taken at 4AHEN002.16.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte
STREAM NAME: Wards Fork Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L39R-04
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 5.73 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Unnamed tributary at RM 5.73
RIVER MILE: 5.73
LATITUDE: 37.02806 **LONGITUDE:** -78.68167

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 36.98889 **LONGITUDE:** -78.64972

Wards Fork Creek from the unnamed tributary at river mile 5.73 downstream to its mouth at Roanoke Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Wards Fork Creek is not supporting the recreation use due to a 3/28 violation rate of fecal coliform bacteria. The violations were recorded in samples taken at 4AWFC002.12.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte
STREAM NAME: Berles Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L40R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.18 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014
UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 2.18
LATITUDE: 36.84083 **LONGITUDE:** -78.59972

DOWNSTREAM LIMIT:

DESCRIPTION: Sandy Creek
RIVER MILE: 0.00
LATITUDE: 36.84139 **LONGITUDE:** -78.63444

Berles Creek from its headwaters to Sandy Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

Berles Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 4/9 samples taken at 4ABES001.21. This is a confined animal feeding operation (CAFO) special study station.

IMPAIRMENT SOURCE: Unknown

Source is unknown. There is not enough data to determine if the CAFO facility is the source of impairment in this segment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax, Charlotte
STREAM NAME: Staunton (Roanoke) River
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L40R-03
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 4.49 - Miles
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2010

UPSTREAM LIMIT:

DESCRIPTION: Pipeline crossing approximately 5.4 miles downstream of Route 360 bridge

RIVER MILE: 56.12

LATITUDE: 36.77139

LONGITUDE: -78.67000

DOWNSTREAM LIMIT:

DESCRIPTION: Kerr Reservoir

RIVER MILE: 51.63

LATITUDE: 36.69778

LONGITUDE: -78.64709

Staunton (Roanoke) River from the pipeline crossing about 5.4 miles downstream of the Route 360 bridge to the backwaters of Kerr Reservoir.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Not Supporting, Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fish Tissue - PCBs, Fecal Coliform

This segment of Staunton (Roanoke) River is not supporting the fish consumption use due to elevated levels of PCBs found in the fish tissue. A 1998 sampling event revealed 4 species with elevated levels and a 2002 sampling event revealed 8 species with elevated levels. Both sampling events occurred at the Route 92 bridge (4AROA059.12).

This segment of Staunton (Roanoke) River is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 7/47 samples taken at 4AROA059.12.

IMPAIRMENT SOURCE: Unknown, Non Point Source

The source of fecal coliform is unknown. The exact source(s) of PCB contamination is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte
STREAM NAME: Sandy Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L40R-04
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 3.34 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014
UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 5.32
LATITUDE: 36.84167 **LONGITUDE:** -78.63389

DOWNSTREAM LIMIT:

DESCRIPTION: Sandy Creek at river mile 1.98
RIVER MILE: 1.98
LATITUDE: 36.85972 **LONGITUDE:** -78.59083

Sandy Creek from its headwaters to river mile 1.98, near the confluence with Berles Creek

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This upstream segment of Sandy Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 2/10 samples taken at 4ASLA002.69.

The segment is also fully supporting but has an observed effect for the aquatic life use due to high levels of phosphorous recorded in 2/10 samples at 4ASLA002.69.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform and phosphorous are unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte
STREAM NAME: Buffalo Creek, UT
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L40R-05
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.88 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 2.88
LATITUDE: 36.78028 **LONGITUDE:** -78.63500

DOWNSTREAM LIMIT:

DESCRIPTION: Buffalo Creek
RIVER MILE: 0.00
LATITUDE: 36.78028 **LONGITUDE:** -78.62944

Unnamed tributary to Buffalo Creek from headwaters to Buffalo Creek

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

The unnamed tributary to Buffalo Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 5/10 samples taken at 4AXMC000.54.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

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RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte, Halifax
STREAM NAME: Buffalo Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L40R-06
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.34 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Unnamed Trib @ RM 2.3
RIVER MILE: 2.34
LATITUDE: 36.79920 **LONGITUDE:** -78.63510

DOWNSTREAM LIMIT:

DESCRIPTION: Roanoke River
RIVER MILE: 0.00
LATITUDE: 36.81270 **LONGITUDE:** -78.66700

Buffalo Creek from an unnamed tributary at river mile 2.3 to the Roanoke River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Buffalo Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 4/10 samples taken at 4ABNN001.85.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Danville, Pittsylvania
STREAM NAME: Sandy River
HYDROLOGIC UNIT: 03010103
TMDL ID: VAC-L58R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 7.21 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Hickory Forest Creek
RIVER MILE: 7.21
LATITUDE: 36.62040 **LONGITUDE:** -79.50530

DOWNSTREAM LIMIT:

DESCRIPTION: Sandy River confluence on the Dan River
RIVER MILE: 0.00
LATITUDE: 36.58694 **LONGITUDE:** -79.41722

Sandy River mainstem from the Hickory Forest Creek mouth downstream to the Sandy River confluence on the Dan River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Sandy River is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 7/25 samples taken at 4ASRV000.20.

The segment has been shortened in the 2004 cycle to reflect the acceptable data recorded upstream. There were no recorded violations in 8 samples taken at 4ASRV007.46.

IMPAIRMENT SOURCE: NPS - Agriculture

The source of the fecal coliform is agriculture and urban runoff.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Pittsylvania
STREAM NAME: Sandy Creek
HYDROLOGIC UNIT: 03010103
TMDL ID: VAC-L59R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 9.17 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 14.71
LATITUDE: 36.70190 **LONGITUDE:** -79.50220

DOWNSTREAM LIMIT:

DESCRIPTION: Little Sandy Creek
RIVER MILE: 5.54
LATITUDE: 36.63210 **LONGITUDE:** -79.43860

Sandy Creek from its headwaters downstream to its confluence with Little Sandy Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Sandy Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 5/25 samples taken at 4ASRC007.06.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax, Pittsylvania
STREAM NAME: Dan River
HYDROLOGIC UNIT: 03010104
TMDL ID: VAC-L60R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 36.79 - Miles
INITIAL LISTING: 2002
TMDL SCHEDULE: 2014
UPSTREAM LIMIT:

DESCRIPTION: VA/NC State Line
RIVER MILE: 42.82
LATITUDE: 37.54194
LONGITUDE: -79.21472

DOWNSTREAM LIMIT:

DESCRIPTION: Peter Creek Confluence
RIVER MILE: 6.03
LATITUDE: 36.68490
LONGITUDE: -78.72440

Dan River mainstem from VA/NC State Line downstream to its confluence with Peter Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Fish Consumption Use - Not Supporting

IMPAIRMENT CAUSE: E. Coli, VDH Health Advisory (PCBs), DDT (9.73 miles), DDE (9.73 miles)

This segment of Dan River is not supporting the recreation use due to excessive counts of E. Coli. Counts exceeded the instantaneous standard in 5/13 samples taken at the Route 62 bridge (4ADAN042.80) and in 3/13 samples taken at the Route 501 bridge (4ADAN015.30). During the transition between the Fecal Coliform standard and the recently approved E coli standard, both the Fecal Coliform standard (400cfu/100mL or 200cfu/100mL for two or more samples over a calendar month) and the E. coli standard (235cfu/100mL or 126cfu/100mL for two or more samples over a calendar month) apply. Since a dataset of 12 or more samples were collected for E coli, only the new standard will apply.

The segment is not supporting the fish consumption use due to a fishing advisory issued by Virginia Department of Health (VDH) on 12/27/99. The advisory on the Dan River begins at the Virginia/North Carolina border north of Virginia Route 62 downstream to Kerr Reservoir at Staunton River State Park. Flathead and channel catfish taken from these waters may contain PCBs. VDH advises the public to eat no more than two 8 oz meals of these fish per month. A portion of this segment of the Dan River is also not supporting the fish consumption use due to elevated levels of Total DDT and DDE. This portion of the river extends from the South Boston raw water intake to its confluence with Peter Creek (9.73 miles). Results of fish tissue sampling are as follows:

Near William M. Tuck airport - 4ADAN012.51 (2002 FT/Sed)
PCBs 3 Species, DDE 1 Species, Total DDT 1 Species
Below South Boston - 4ADAN012.82 (2000 FT/Sed)
PCBs 3 Species
Downstream of South Boston - 4ADAN013.34 (1999 FT/Sed)
PCBs 7 Species, DDE 1 Species, Total DDT 1 Species
Upstream of Lawsons Creek - 4ADAN017.44 (1999 FT/Sed)
PCBs in Fish Tissue 2 Species

The 2004 segment combines the 2002 L60, L62, L64 and L73 segments of the Dan River.

Fact Sheets for Category 5 Waters

IMPAIRMENT SOURCE: Non-Point Source, Unknown, Unknown, Unknown

The source of the E. Coli is non-point source. VDH has issued a fish consumption advisory due to PCBs.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Danville
STREAM NAME: Fall Creek
HYDROLOGIC UNIT: 03010105
TMDL ID: VAC-L61R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.3 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Little Fall Creek
RIVER MILE: 2.30
LATITUDE: 36.60400 **LONGITUDE:** -79.36020

DOWNSTREAM LIMIT:

DESCRIPTION: Dan River
RIVER MILE: 0.00
LATITUDE: 36.58510 **LONGITUDE:** -79.37950

Fall Creek mainstem from its mouth on the Dan River upstream to the mouth of Little Fall Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Fall Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 5/25 samples taken at 4AFAL001.58.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax, Pittsylvania
STREAM NAME: Double Creek
HYDROLOGIC UNIT: 03010104
TMDL ID: VAC-L62R-03
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 8.28 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014
UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 8.28
LATITUDE: 36.66361 **LONGITUDE:** -79.26250

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 36.60833 **LONGITUDE:** -79.16028

Double Creek from its headwaters to its mouth at the Dan River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Double Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 3/28 samples taken at 4ADBC002.19.

IMPAIRMENT SOURCE: Non-Point Source

The source of fecal coliform is non-point source.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax
STREAM NAME: Byrds Branch
HYDROLOGIC UNIT: 03010105
TMDL ID: VAC-L62R-04
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.98 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 2.98
LATITUDE: 36.63970 **LONGITUDE:** -79.15250

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 36.61760 **LONGITUDE:** -79.10470

Byrds Branch from its headwaters to the mouth at the Dan River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Byrds Branch is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 3/9 samples taken at 4ABYR002.13 and 4/9 samples taken at 4ABYR000.80.

IMPAIRMENT SOURCE: Non-Point Source

The source of fecal coliform is non-point source.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax
STREAM NAME: Birch Creek
HYDROLOGIC UNIT: 03010104
TMDL ID: VAC-L63R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 4.83 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: Carlton Creek
RIVER MILE: 4.83
LATITUDE: 36.69417 **LONGITUDE:** -79.11639

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 36.66361 **LONGITUDE:** -79.05472

Birch Creek from Carlton Creek to its mouth at the Dan River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Birch Creek is not supporting the swimming use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 7/26 samples taken at 4ABIR001.00.

IMPAIRMENT SOURCE: Non-Point Source

The source of fecal coliform is non-point source.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Pittsylvania
STREAM NAME: Banister River
HYDROLOGIC UNIT: 03010105
TMDL ID: VAC-L65R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 11.65 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 81.35
LATITUDE: 36.83580 **LONGITUDE:** -79.55690

DOWNSTREAM LIMIT:

DESCRIPTION: Bearskin Creek confluence
RIVER MILE: 69.70
LATITUDE: 36.77040 **LONGITUDE:** -79.45340

Banister River from its headwaters to the Bearskin Creek confluence

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE:

 Fecal Coliform

This segment of Banister River is not supporting the recreation use due to excessive counts of fecal coliform. Counts exceeded the instantaneous standard in 3/25 samples taken at 4ABAN070.20.

IMPAIRMENT SOURCE:

 Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Pittsylvania
STREAM NAME: Cherrystone Creek
HYDROLOGIC UNIT: 03010105
TMDL ID: VAC-L66R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 8.57 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2010

UPSTREAM LIMIT:

DESCRIPTION: Cherrystone Creek Dam
RIVER MILE: 8.57
LATITUDE: 36.85100 **LONGITUDE:** -79.43120

DOWNSTREAM LIMIT:

DESCRIPTION: Banister River
RIVER MILE: 0.00
LATITUDE: 36.80740 **LONGITUDE:** -79.33970

Cherrystone Creek mainstem from the Cherrystone Creek dam downstream to the Banister River confluence.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Cherrystone Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 5/17 samples taken at 4ACRR003.56 and 11/26 samples taken at 4ACRR000.80.

The 2004 segment combines the 2002 impaired segments into one. The Cherrystone Creek segment was extended in the 2004 cycle from the dam to its mouth on Banister River.

IMPAIRMENT SOURCE: NPS - Agriculture/Urban

The source of the fecal coliform is agriculture and urban runoff/storm sewers.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax
STREAM NAME: Banister River
HYDROLOGIC UNIT: 03010105
TMDL ID: VAC-L67R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 8.62 - Miles
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2010
UPSTREAM LIMIT:

DESCRIPTION: Elkhorn Creek
RIVER MILE: 24.72
LATITUDE: 36.89833 **LONGITUDE:** -79.11083

DOWNSTREAM LIMIT:

DESCRIPTION: Banister Lake
RIVER MILE: 16.10
LATITUDE: 36.81222 **LONGITUDE:** -79.98472

Banister River from Elkhorn Creek to Banister Lake.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform (1998), E. Coli (2004)

The segment was evaluated not supporting of the recreation use support goal based on a fecal coliform violation rate of 3/19 and a E. coli violation rate of 2/7 at the Route 642 bridge (4ABAN023.28).

Both the Fecal Coliform standard (400cfu/100mL or 200cfu/100mL for two or more samples over a calendar month) and the E. coli standard (235cfu/100mL or 126cfu/100mL for two or more samples over a calendar month) apply during the transition between the Fecal Coliform standard and the recently approved E coli standard. Once a dataset of 12 or more samples are collected for E coli or after June 30, 2008 whichever comes first, only the new standard will apply.

IMPAIRMENT SOURCE: Unknown, Unknown

The source of fecal coliform and E. Coli is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Pittsylvania
STREAM NAME: Whitehorn Creek
HYDROLOGIC UNIT: 03010105
TMDL ID: VAC-L68R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 10.53 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Where the creek forks just downstream of the Rt. 29 crossing.

RIVER MILE: 10.53

LATITUDE: 36.91778

LONGITUDE: -79.37472

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth of Whitehorn Creek

RIVER MILE: 0.00

LATITUDE: 36.87444

LONGITUDE: -79.24222

Whitehorn Creek mainstem from its mouth on Georges Creek upstream to where the creek forks just downstream of the Rt. 29 crossing.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Whitehorn Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 2/17 samples taken at 4AWRN005.50.

IMPAIRMENT SOURCE: NPS - Agriculture

The source of the fecal coliform is agriculture.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Pittsylvania
STREAM NAME: Stinking River
HYDROLOGIC UNIT: 03010105
TMDL ID: VAC-L69R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 8.98 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: North Fork Stinking River
RIVER MILE: 8.98
LATITUDE: 36.96010 **LONGITUDE:** -79.27970

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 36.90740 **LONGITUDE:** -79.19310

Stinking River mainstem from its mouth on the Banister River upstream to the mouth of the North Fork of Stinking River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Stinking River is not supporting the recreation use due to excessive counts of fecal coliform bacteria found in 4/27 samples taken at station 4ASNE005.30.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax
STREAM NAME: Sandy Creek
HYDROLOGIC UNIT: 03010105
TMDL ID: VAC-L70R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 11.76 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Johns Run
RIVER MILE: 11.76
LATITUDE: 36.78556 **LONGITUDE:** -79.14528

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 36.82667 **LONGITUDE:** -79.02389

Sandy Creek from Johns Run to its mouth at the Banister River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Sandy Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 4/27 samples taken at 4ASNA000.20.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax
STREAM NAME: Banister River
HYDROLOGIC UNIT: 03010105
TMDL ID: VAC-L71R-04
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 13.78 - Miles
INITIAL LISTING: 1998
TMDL SCHEDULE: 2016
UPSTREAM LIMIT:

DESCRIPTION: Banister Lake Dam
RIVER MILE: 13.78
LATITUDE: 36.78167
LONGITUDE: -78.02389

DOWNSTREAM LIMIT:

DESCRIPTION: Dan River confluence
RIVER MILE: 0.00
LATITUDE: 36.69833
LONGITUDE: -78.79472

Banister River from the Banister Lake dam downstream to its confluence with the Dan River

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Not Supporting, Recreation Use - Not Supporting

IMPAIRMENT CAUSE: PCBs (2002), Fecal Coliform (1998)

This segment of Banister River is not supporting the fish consumption use due to elevated levels of PCBs found in the fish tissue. The sampling events and results occurred at the following stations:

Near Route 614 (4ABAN008.30)
2002 PCB 1 Species
Upstream of pipeline (4ABAN000.05)
2000 PCB 3 Species

There are also 2 observed effects for this segment of the Banister River. Mercury and Arsenic have been found in fish tissue during 1999 and 2002 sampling events.

The US EPA conducted a study of chemical residues in lake fish in 2001 on Banister River Lake. The results show no exceedences of Mercury, PCBs or Arsenic in fish tissue.

The aquatic life use is considered fully supporting with an observed effect. Elevated levels of Total DDT was detected in the sediment near Route 716 (4ABAN001.98) during a 1999 Special Project.

This segment of Banister River is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 5/41 at 4ABAN005.58.

IMPAIRMENT SOURCE: Unknown, Unknown

The source of the PCBs and fecal coliform are unknown.

Fact Sheets for Category 5 Waters

The source of Mercury and Arsenic are unknown.

The source of the Total DDT is considered unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax, Mecklenburg
STREAM NAME: Dan River
HYDROLOGIC UNIT: 03010104
TMDL ID: VAC-L73L-03
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 1624.93 - Acres
INITIAL LISTING: 1998
TMDL SCHEDULE: 2010
UPSTREAM LIMIT:

DESCRIPTION: Peter Creek Confluence
RIVER MILE: 6.03
LATITUDE: 36.68490
LONGITUDE: -78.72440

DOWNSTREAM LIMIT:

DESCRIPTION: Roanoke River Confluence (Kerr Reservoir)
RIVER MILE: 0.00
LATITUDE: 36.68900
LONGITUDE: -78.64750

Dan River from the Peter Creek confluence to the Roanoke River Confluence (Kerr Reservoir).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Fish Consumption Use - Not Supporting

IMPAIRMENT CAUSE: E. Coli, VDH Health Advisory (PCBs)

This segment of Dan River is not supporting the recreation use due to excessive counts of E. Coli. Counts exceeded the instantaneous standard in 3/13 samples taken at the Route 501 bridge (4ADAN015.30). During the transition between the Fecal Coliform standard and the recently approved E coli standard, both the Fecal Coliform standard (400cfu/100mL or 200cfu/100mL for two or more samples over a calendar month) and the E. coli standard (235cfu/100mL or 126cfu/100mL for two or more samples over a calendar month) apply. Since a dataset of 12 or more samples were collected for E coli, only the new standard will apply.

The segment is not supporting the fish consumption use due to sampling conducted at 4ADAN017.44 which found 2 species with PCBs. A fishing advisory issued by the Virginia Department of Health (VDH) is currently in effect and was issued on 12/27/99. The advisory on the Dan River begins at the Virginia/North Carolina border north of Virginia Route 62 downstream to Kerr Reservoir at Staunton River State Park. Flathead and channel catfish taken from these waters may contain PCBs. VDH advises the public to eat no more than two 8 oz meals of these fish per month.

This segment was originally a part of a 1998 riverine segment, but was resegmented in 2004 to correctly show it as a part of the backwaters of Kerr Reservoir.

IMPAIRMENT SOURCE: Non-Point Source, Unknown

The source of E. Coli and PCBs is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax, Mecklenburg
STREAM NAME: Aarons Creek
HYDROLOGIC UNIT: 03010104
TMDL ID: VAC-L73R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 14.68 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 14.68
LATITUDE: 36.54222 **LONGITUDE:** -78.73361

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 36.67250 **LONGITUDE:** -78.70056

Aarons Creek from its headwaters at the VA/NC state line downstream to its mouth at the Dan River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Aarons Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 4/28 samples taken at 4AAAR004.72

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax
STREAM NAME: Hyco River
HYDROLOGIC UNIT: 03010104
TMDL ID: VAC-L74R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 21.13 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Bluewing Creek
RIVER MILE: 21.13
LATITUDE: 36.62083 **LONGITUDE:** -78.83806

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth
RIVER MILE: 0.00
LATITUDE: 36.68778 **LONGITUDE:** -78.77722

Hyco River from Bluewing Creek downstream to its mouth at the Dan River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Hyco River is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 6/47 at 4AHYC002.70. The segment was assessed as fully supporting but there is an observed effect for the fish consumption use support goal due to 1999 and 2000 fish tissue studies. The studies indicated PCBs were present in 1 species.

IMPAIRMENT SOURCE: Unknown

The sources of fecal coliform and PCBs are unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax
STREAM NAME: Little Coleman Creek
HYDROLOGIC UNIT: 03010104
TMDL ID: VAC-L74R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 3.44 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 3.44
LATITUDE: 36.56778 **LONGITUDE:** -78.97750

DOWNSTREAM LIMIT:

DESCRIPTION: Coleman Creek
RIVER MILE: 0.00
LATITUDE: 36.58278 **LONGITUDE:** -78.92611

Little Coleman Creek from its headwaters to Coleman Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Little Coleman Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 4/10 at 4ALOL000.62. This is a confined animal feeding operation (CAFO) special study station.

IMPAIRMENT SOURCE: Unknown

Source is unknown. There is not enough data to determine if the CAFO facility is the source of impairment in this segment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Halifax
STREAM NAME: Coleman Creek
HYDROLOGIC UNIT: 03010104
TMDL ID: VAC-L74R-03
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 5.45 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 8.03
LATITUDE: 36.57639 **LONGITUDE:** -78.99694

DOWNSTREAM LIMIT:

DESCRIPTION: Little Coleman Creek
RIVER MILE: 2.58
LATITUDE: 36.58222 **LONGITUDE:** -78.92694

Coleman Creek from its headwaters to Little Coleman Creek

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Coleman Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 3/10 samples taken at 4ACLB005.17 and 2/10 samples taken at 4ACLB007.78. These stations are a part of a confined animal feeding operation (CAFO) special study.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Charlotte, Halifax, Mecklenburg
STREAM NAME: Kerr Reservoir
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L75L-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 31626.42 - Acres
INITIAL LISTING: 2002
TMDL SCHEDULE: 2010
UPSTREAM LIMIT:

DESCRIPTION: Roanoke/Dan Confluence
RIVER MILE: 45.62
LATITUDE: 36.73083
LONGITUDE: -78.68306

DOWNSTREAM LIMIT:

DESCRIPTION: John H. Kerr Dam
RIVER MILE: 18.04
LATITUDE: 36.59833
LONGITUDE: -78.29722

All of Kerr Reservoir within Virginia

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Fish Tissue - PCBs, Dissolved Oxygen (7468.87 Acres) (2004), Trophic State Index

All of Kerr Reservoir within Virginia was assessed not supporting of the Fish Consumption use support goal based on fish tissue data collected in the Roanoke River Basin. The study identified widespread PCB contamination in the Roanoke River Basin, including Kerr Reservoir. In addition, there are observed effects on the use due to mercury and heptachlor epoxide exceedences of the DEQ screening values found in the fish tissue .

A portion of Kerr Reservoir was assessed not supporting of the Aquatic Life Use based on low dissolved oxygen below the thermocline at 4AROA038.49 & 4AROA043.14. The portion extends from the Route 58 bridge crossing upstream to the backwaters of the reservoir. Kerr Reservoir is stratified May - August. Trophic State Indices were calculated at the following stations:
Route 58 Bridge (4AROA038.49) - Chlorophyll a - 62, Total Phosphorous - 58.24 and Secchi Depth - 60.
Buoy 24 (4AROA043.14) - Chlorophyll a - 66.77, Total Phosphorous - 59.59 and Secchi Depth - 63.22.
This portion of Kerr Reservoir is considered eutrophic and impaired based on these calculations.

The lower portion of the reservoir, from the Route 58 bridge to the John H. Kerr dam is considered impaired, but does not require a TMDL because the impairment is not caused by a pollutant. Trophic State Indices were calculated at the following stations:
Buoy 1 (4AROA018.36) - Chlorophyll a - 45.8, Total Phosphorous - 49.1 and Secchi Depth - 47.37
Buoy 4 (4AROA022.52) - Chlorophyll a - 47.86, Total Phosphorous - 44.15 and Secchi Depth - 50
Buoy 9 (4AROA028.04) - Chlorophyll a - 53.74, Total Phosphorous - 49.1 and Secchi Depth - 51.93
Buoy 14 (4AROA032.42) - Chlorophyll a - 57.58, Total Phosphorous - 52.22 and Secchi Depth - 56.5
Grassy Creek Arm Route 15 (4AGRA003.22) - Chlorophyll a - 56.13 and Total Phosphorous - 50.59
Butchers Creek Arm Route 756 (4ABHB004.40) - Chlorophyll a - 48.85 and Total Phosphorous - 52.22
This portion of Kerr Reservoir is considered mesotrophic based on these calculations.

IMPAIRMENT SOURCE: Unknown, Unknown, Unknown

Fact Sheets for Category 5 Waters

The source of the contamination is considered unknown.

The source of the dissolved oxygen violations are due to one or more pollutants from anthropogenic sources.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Butcher Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L75R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 12.45 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 19.66
LATITUDE: 36.80790 **LONGITUDE:** -78.44530

DOWNSTREAM LIMIT:

DESCRIPTION: Kerr Reservoir
RIVER MILE: 7.20
LATITUDE: 36.68450 **LONGITUDE:** -78.46420

Butcher Creek from its headwaters to the Kerr Reservoir

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Butcher Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 3/25 samples taken at 4ABHB008.63.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Beaver Pond Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L75R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 5.03 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 7.41
LATITUDE: 36.59570 **LONGITUDE:** -78.62080

DOWNSTREAM LIMIT:

DESCRIPTION: Kerr Reservoir
RIVER MILE: 2.38
LATITUDE: 36.59010 **LONGITUDE:** -78.56930

Beaver Pond Creek from its headwaters to Kerr Reservoir

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Beaver Pond Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 2/9 samples taken at 4ABPC003.14.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Little Buffalo Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L76R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.56 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 2.56
LATITUDE: 36.60722 **LONGITUDE:** -78.62944

DOWNSTREAM LIMIT:

DESCRIPTION: Buffalo Creek/Kerr Reservoir
RIVER MILE: 0.00
LATITUDE: 36.63611 **LONGITUDE:** -78.63139

Little Buffalo Creek from its headwaters to Buffalo Creek, an arm of Kerr Reservoir.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Little Buffalo Creek is not supporting the recreation use due to excessive counts of E Coli and fecal coliform bacteria. Counts exceeded the E Coli instantaneous standard in 4/7 samples, as well as the fecal coliform instantaneous standard in 17/29 samples taken at 4ALFF001.85.

Both the Fecal Coliform standard (400cfu/100mL or 200cfu/100mL for two or more samples over a calendar month) and the E. coli standard (235cfu/100mL or 126cfu/100mL for two or more samples over a calendar month) apply during the transition between the Fecal Coliform standard and the recently approved E coli standard. Once a dataset of 12 or more samples are collected for E coli or after June 30, 2008 whichever comes first, only the new standard will apply.

This segment is fully supporting for the aquatic life use, but has an observed effect due to exceedances of the nutrient screening value. Total phosphorus exceeded the screening value in 11/28 samples taken at 4ALFF001.85.

IMPAIRMENT SOURCE: Unknown

Source is believed to be Newton Mobile Home Court. Additional monitoring will be performed to determine whether fecal coliform and phosphorus levels continue to violate water quality standards.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Little Bluestone Creek
HYDROLOGIC UNIT: 03010102
TMDL ID: VAC-L77R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 9.34 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Fork upstream of Route 696
RIVER MILE: 9.34
LATITUDE: 36.74720 **LONGITUDE:** -78.50830

DOWNSTREAM LIMIT:

DESCRIPTION: Kerr Reservoir
RIVER MILE: 0.00
LATITUDE: 36.69990 **LONGITUDE:** -78.57440

Fork upstream of Route 696 to Kerr Reservoir.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Little Blustone Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 4/26 samples taken at 4ALNE006.56.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Roanoke River/Lake Gaston
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L78R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 5.96 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2010
UPSTREAM LIMIT:

DESCRIPTION: John H. Kerr Dam
RIVER MILE: 18.04
LATITUDE: 36.60030 **LONGITUDE:** -78.29833

DOWNSTREAM LIMIT:
DESCRIPTION: Route 1
RIVER MILE: 12.08
LATITUDE: 36.60795 **LONGITUDE:** -78.20903

Headwaters of Lake Gaston from the John H. Kerr Dam to the Smith Creek confluence.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Dissolved Oxygen

This segment of Roanoke River is not supporting the aquatic life use support goal based on water quality monitoring just downstream of the dam (4AROA018.04) and at the Route 1 bridge (4AROA012.08). At 4AROA018.04, 11 violations of the DO standard were recorded in 49 samples collected, and at 4AROA012.08, there were 6 recorded violations of the DO standard in 33 samples collected. A special study conducted in 1995 identified the Route I-85 bridge as the approximate downstream limit of the impairment.

IMPAIRMENT SOURCE: PS - Upstream Impoundment, Hypolimnetic Waters Release

The DO standard violations in this segment are seasonal, occurring only during summer months, and are attributed to the releases of hypolimnetic water releases through John H. Kerr Dam when the reservoir is stratified.

To correct the DO deficiencies in this segment, background DO levels need to be maintained at a minimum of 5.0 mg/l, which represents Virginia's water quality standard for average daily DO concentration.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Allen Creek, UT
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L78R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 0.92 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 0.92
LATITUDE: 36.62810 **LONGITUDE:** -78.25600

DOWNSTREAM LIMIT:

DESCRIPTION: Confluence with Allen Creek
RIVER MILE: 0.00
LATITUDE: 36.61860 **LONGITUDE:** -78.26440

Entire tributary located just south of the intersection of Redlawn and Baskerville Roads

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE:

 Fecal Coliform

This segment of the Unnamed Tributary to Allen Creek is not supporting of the recreation use due to excessive counts of the instantaneous standard. The violation rate of 2/4 samples was observed during a special study sampling period at station 4AXUQ000.00.

IMPAIRMENT SOURCE:

 Non-Point Source

The source of fecal coliform is non-point sources.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Allen Creek
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L78R-03
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 8.97 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Layton Creek Confluence
RIVER MILE: 12.92
LATITUDE: 36.69860 **LONGITUDE:** -78.33620

DOWNSTREAM LIMIT:

DESCRIPTION: Cox Creek Confluence
RIVER MILE: 3.95
LATITUDE: 36.62410 **LONGITUDE:** -78.29030

Allen Creek from Layton Creek downstream to Cox Creek

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Allen Creek is not supporting the recreation use due to excessive counts of Fecal Coliform. A violation rate of 6/25 samples was observed at the Antlers Road bridge (4AALN009.12).

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Cox Creek
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L78R-04
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 4.19 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Route 58 crossing
RIVER MILE: 4.19
LATITUDE: 36.67120 **LONGITUDE:** -78.27310

DOWNSTREAM LIMIT:

DESCRIPTION: Allen Creek Confluence
RIVER MILE: 0.00
LATITUDE: 36.62390 **LONGITUDE:** -78.29000

Cox Creek from Route 58 downstream to its confluence with Allen Cree

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Dissolved Oxygen

This segment of Cox Creek is not supporting the Aquatic Life use goal due to violations of the minimum Dissolved Oxygen standard. A violation rate of 3/7 samples was observed at the station located on Redlawn Road (4ACOX000.38).

IMPAIRMENT SOURCE: Unknown

The source of the DO standard violations are unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Roanoke River/Lake Gaston
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L79L-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 1379.57 - Acres
INITIAL LISTING: 1996
TMDL SCHEDULE: 2010
UPSTREAM LIMIT:

DESCRIPTION: Route 1

RIVER MILE: 12.08

LATITUDE: 36.60795

LONGITUDE: -78.20903

DOWNSTREAM LIMIT:

DESCRIPTION: Smith Creek Confluence

RIVER MILE: 7.40

LATITUDE: 36.57237

LONGITUDE: -78.15502

Roanoke River from Route 1 (backwaters of Lake Gaston) to its confluence with Smith Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Dissolved Oxygen

This segment of Roanoke River is not supporting the aquatic life use support goal based on water quality monitoring at the Route 1 bridge (4AROA012.08) and at the Route 85 bridge (4AROA008.66). At 4AROA012.08, 6 violations of the DO standard were recorded in 33 samples collected. Lake Gaston is stratified during July and August, the samples were split at station 4AROA008.66 dependent on what depth the thermocline appeared. There were 17 recorded violations of the DO standard in 25 samples collected above the thermocline and 5 recorded violations of the DO standard in 10 samples collected below the thermocline. A special study conducted in 1995 identified the Route I-85 bridge as the approximate downstream limit of the impairment.

IMPAIRMENT SOURCE: PS - Upstream Impoundment

The DO standard violations in this segment are seasonal, occurring only during summer months, and are attributed to the releases of hypolimnetic water releases through John H. Kerr Dam when the reservoir is stratified.

To correct the DO deficiencies in this segment, background DO levels need to be maintained at a minimum of 5.0 mg/l, which represents Virginia's water quality standard for average daily DO concentration.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Flat Creek
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L79R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 8.67 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: Town of South Hill STP discharge
RIVER MILE: 8.67
LATITUDE: 36.69694 **LONGITUDE:** -78.13194

DOWNSTREAM LIMIT:

DESCRIPTION: Roanoke River (Lake Gaston)
RIVER MILE: 0.00
LATITUDE: 36.61750 **LONGITUDE:** -78.17750

Segment begins at the South Hill Regional Sewage Treatment Plant discharge, and extends downstream to the Roanoke River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform, General Standard (Benthic)

Biological monitoring of Flat Creek identified excessive solids deposits and an impaired benthic community downstream of the South Hill STP discharge. As a result, the segment is not supporting the aquatic life use. An improvement has been observed over the five year assesment cycle because of recent upgrades to the South Hill STP. The upgrades consisted of modern oxidation that performs nitrification and denitrification, new secondary clarifiers, tertiary sand filtration and additional digester capacity.

The segment is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 10/43 samples at 4AFLT008.79.

In addition, there were 20 exceedances of the phosphorus screening value in 44 total samples at 4AFLT008.79.

IMPAIRMENT SOURCE: Unknown, PS - Municipal

The source of the benthic impairment are attributed to the South Hill STP and the source of the bacteria is considered unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Miles Creek
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L79R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 5.55 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Lake Gordon
RIVER MILE: 5.55
LATITUDE: 36.68806 **LONGITUDE:** -78.21722

DOWNSTREAM LIMIT:

DESCRIPTION: Roanoke River
RIVER MILE: 0.00
LATITUDE: 36.62556 **LONGITUDE:** -78.20944

Miles Creek from Lake Gordon to the Roanoke River

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Miles Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 3/26 samples taken at 4AMES004.78.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Brunswick, Mecklenburg
STREAM NAME: Roanoke River/Lake Gaston
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L80L-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 5528.95 - Acres
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2010

UPSTREAM LIMIT:

DESCRIPTION: John H. Kerr Dam
RIVER MILE: 18.04
LATITUDE: 36.60030 **LONGITUDE:** -78.29833

DOWNSTREAM LIMIT:

DESCRIPTION: VA/NC State Line
RIVER MILE: 0.00
LATITUDE: 36.54539 **LONGITUDE:** -78.04863

All of Lake Gaston within Virginia.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Not Supporting

IMPAIRMENT CAUSE: PCBs in Fish Tissue

A 1993 special study identified widespread PCB contamination in the Roanoke River Basin, including Lake Gaston within Virginia. Fish tissue studies conducted during 1999 and 2002 continue to show evidence of PCB contamination in the lake. As a result the lake is not supporting the fish consumption use.

IMPAIRMENT SOURCE: Unknown

The sources of the PCB contamination are considered unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Mecklenburg
STREAM NAME: Great Creek
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L80R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 6.91 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2010
UPSTREAM LIMIT:

DESCRIPTION: Headwaters
 RIVER MILE: 9.91
 LATITUDE: 36.67500 **LONGITUDE:** -78.07389

DOWNSTREAM LIMIT:
 DESCRIPTION: Lake Gaston
 RIVER MILE: 3.00
 LATITUDE: 36.58722 **LONGITUDE:** -78.09306

Great Creek from its headwaters downstream to the pool of Lake Gaston.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Great Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 6/18 samples taken at 4AGRT003.82.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Brunswick
STREAM NAME: Poplar Creek
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L81R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 3.41 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Main Creek
RIVER MILE: 3.41
LATITUDE: 36.63056 **LONGITUDE:** -78.02778

DOWNSTREAM LIMIT:

DESCRIPTION: Lake Gaston
RIVER MILE: 0.00
LATITUDE: 36.58917 **LONGITUDE:** -78.03806

Poplar Creek from Main Creek to Lake Gaston

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Poplar Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 3/27 samples taken at 4APOB006.35.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Brunswick
STREAM NAME: Pea Hill Creek
HYDROLOGIC UNIT: 03010106
TMDL ID: VAC-L82R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 4.77 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Headwaters
RIVER MILE: 11.07
LATITUDE: 36.61056 **LONGITUDE:** -77.94639

DOWNSTREAM LIMIT:

DESCRIPTION: Lake Gaston
RIVER MILE: 6.30
LATITUDE: 36.58306 **LONGITUDE:** -77.89083

Pea Hill Creek from its headwaters downstream to Lake Gaston.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Fecal Coliform

This segment of Pea Hill Creek is not supporting the recreation use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 6/26 samples taken at 4APHC006.38.

IMPAIRMENT SOURCE: Unknown

The source of fecal coliform is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Montgomery
STREAM NAME: Roanoke River, South Fork
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L01R-01
ASSESSMENT CATEGORY: 5A/5C
SEGMENT SIZE: 12.65 - Miles
INITIAL LISTING: 2004
TMDL SCHEDULE: 2016
UPSTREAM LIMIT:

DESCRIPTION: Confluence of Elliott Cr.

RIVER MILE: 12.65

LATITUDE: 37.12723

LONGITUDE: -80.26614

DOWNSTREAM LIMIT:

DESCRIPTION: S.F. Roanoke R. confluence with N.F. Roanoke R.

RIVER MILE: 0.00

LATITUDE: 37.23734

LONGITUDE: -80.21402

The segment begins at the mouth of Elliott Creek and extends downstream to the confluence of the South and North Forks of the Roanoke River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria, Temperature

Recreational Use

Two stations on the S.F. Roanoke River, 4ARSF011.73 located on the Rt. 637 Bridge and 4ARSF002.20 above the old Green Hill industrial site near Rt. 11/460, find the recreational use is not supported.

4ARSF011.73 finds three of 12 fecal coliform bacteria samples exceed while 4ARSF002.20 finds three of 18 exceedances of the 400 cfu/100 ml WQS instantaneous criterion. 4ARSF011.73 exceedances range from 600 to 3000 cfu/100 ml and the downstream station 4ARSF002.20 exceedances range from 600 to 5300 cfu/100 ml.

Aquatic Life Use

Upstream temperatures at 4ARSF011.73 exceed the WQS stockable trout water criterion of 21°C in two of 12 measurements and downstream at 4ARSF002.20 records two exceedances from 18 measurements. Exceedances at both stations are 22°C on the same dates 7/22/99 and 6/06/01. The waters do not support the aquatic life use (Category 5C). Low stream flows and drought conditions were observed during both 1999 and 2001.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban / Wildlife, Unknown

Recreational Use

Exact sources of the fecal coliform bacteria are not known but are believed to be related to agricultural activity, urbanization and possible wildlife contributions.

Aquatic Life Use

There are no known sources of heat in the upper portions of the South Fork. The only known source of heat is from natural solar radiation. Drought conditions for 1999 and 2001 did exist. Two VPDES permitted facilities are in the downstream portion of the segment but are not

Fact Sheets for Category 5 Waters

believed to be contributing to the temperature excursions of the stockable trout water standard.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Montgomery
STREAM NAME: Roanoke River, North Fork
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L02R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 6.56 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Wilson Creek mouth on the N.F. Roanoke R.
RIVER MILE: 15.21
LATITUDE: 37.18750 **LONGITUDE:** -80.35236

DOWNSTREAM LIMIT:

DESCRIPTION: Unnamed Tributary in Ironto
RIVER MILE: 8.65
LATITUDE: 37.21639 **LONGITUDE:** -80.27680

The upper limit is located at the mouth of Wilson Cr. on the North Fork Roanoke River. The downstream segment end is at an unnamed tributary in the community of Ironto.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4ARNF015.09, located just downstream of the Rt. 603 crossing in Montgomery County, records nine of 21 samples exceeding the fecal coliform bacteria instantaneous criterion of 400 cfu/100 ml. The recreational use is not supported in this segment.

Observed Effect

A 1999 fish tissue collection at 4ARNF013.60 finds a 'Water of Concern' for the fish consumption use due to exceedance of the human health-risk carcinogenic Risk Based tissue screening value (TSV) of 0.072 parts per million (ppm) for arsenic (As). Two species exceed the TSV [Guidance Table 6(b)]. Fish tissue results reveal a Green Sunfish at 0.51 ppm, a White Sucker at 0.27 and a Golden Redhorse Sucker at 1.30 ppm.

IMPAIRMENT SOURCE: NPS - Urban / Agriculture / Wildlife

Recreational Use

The source of the impairment is believed to be nonpoint source pollution due to urban activities. There are some agricultural activities in this area as well. Woodlands offer the potential for wildlife contributions. This segment is downstream of the Wilson Creek segment that does not support the swimming use. Effects of Wilson Creek segment may contribute to the exceedances in the N.F. Roanoke R.

Fish Consumption Use

The source of the arsenic in fish tissue is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Montgomery
STREAM NAME: Wilson Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L02R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 6.91 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2006

UPSTREAM LIMIT:

DESCRIPTION: East of Rt. 460, Off Rt. 723, Christiansburg.
RIVER MILE: 6.91
LATITUDE: 37.14194 **LONGITUDE:** -80.39083

DOWNSTREAM LIMIT:

DESCRIPTION: Wilson Creek mouth on N.F. Roanoke R.
RIVER MILE: 0.00
LATITUDE: 37.18778 **LONGITUDE:** -80.35222

The upper limit is just east of Rt. 460, off Rt. 723 near Christiansburg (Blacksburg Quad). The segment ends at the mouth of Wilson Creek on the North Fork of the Roanoke River just upstream of Rt. 603. The segment includes an unnamed tributary (1.65 mi.) that enters on the northern side of Wilson Creek. The segment spans the Blacksburg and Ironto Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Bacteria counts fail to meet the requirements for the use. The assessment is based on data from station 4AWLN000.40 at the Rt. 603 Bridge. The segment expanded (1.65 miles) over the 1998 Impaired waters list in 2002 with the addition of an unnamed tributary entering Wilson Creek from the north. Fourteen of 27 samples exceed the fecal coliform bacteria instantaneous criterion of 400 cfu/100 ml. Exceeding values range from 700 to 5400 cfu/100 ml. Two of three *Escherichia coli* (*E. coli*) samples exceed the 235 cfu/100 ml instantaneous criterion. *E. coli* exceeding values are 350 and 800 cfu/100 ml.

IMPAIRMENT SOURCE: NPS - Urban

Recreational Use

The source of the impairment is believed to be nonpoint source pollution due to primarily urban activities. The Wilson Creek drainage lies within the corridor between Christiansburg and Blacksburg that has seen a great deal of development.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Montgomery, Roanoke
STREAM NAME: Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L03R-01
ASSESSMENT CATEGORY: 5A/5C
SEGMENT SIZE: 3.63 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: N.F. / S.F. Roanoke R. confluence.
RIVER MILE: 226.98
LATITUDE: 37.23722 **LONGITUDE:** -80.21395

DOWNSTREAM LIMIT:

DESCRIPTION: Near Dixie Caverns
RIVER MILE: 223.35
LATITUDE: 37.25194 **LONGITUDE:** -80.17232

The upstream limit of this segment is located at the confluence of the North and South Forks of the Roanoke River. The segment ends at river mile 223.35 near Dixie Caverns at the end of the WQS PWS designation.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (2004), Temperature

Recreational Use

Station 4AROA227.42 is included in the 1999 Federal Consent Decree as a 1998 Attachment B station for fecal coliform bacteria. The Attachment B station represents approximately 9.25 miles from the confluence of the North and South Forks of the Roanoke River downstream to an unnamed tributary at Dixie Caverns (VAW-L03R-02). The station was not listed in 2002 as exceedances of the former WQS 1000 cfu/100 ml instantaneous criterion are 5 percent. Three of 59 samples exceed the former instantaneous criterion. The 2004 Integrated Report finds an 11.8 percent exceedance rate.

Station 4AROA227.42, located at the Rt. 773 Bridge in Lafayette, records seven of 59 fecal coliform bacteria samples exceed the current 400 cfu/100ml instantaneous criterion (Category 5A). Exceeding values range from 500 cfu/100 ml to 4300.

Aquatic Life Use

Temperature also exceeds the stockable trout water criterion of 21°C in nine of 59 measurements occurring mostly in the summer months (Category 5C). Exceedances range from 22 to 27°C. This impairment is a 2004 addition to the 2002 temperature impairment found downstream.

IMPAIRMENT SOURCE: NPS - Urban, Unknown

Recreational Use

Fecal coliform bacteria exceedances are believed to be the result of nonpoint source pollution from urbanization and some agricultural contributions. Wildlife may contribute to the overall impairment.

Aquatic Life Use

The exact source(s) contributing to the temperature impairment is not known but is believed to be natural due to solar radiation.

Fact Sheets for Category 5 Waters

Exceedances occur upstream of any heat sources. There are no known significant sources of heat contributing to impairment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke, Salem
STREAM NAME: Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L03R-02
ASSESSMENT CATEGORY: 5A/5C
SEGMENT SIZE: 11.68 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Near Dixie Caverns
RIVER MILE: 223.35
LATITUDE: 37.25194 **LONGITUDE:** -80.17232

DOWNSTREAM LIMIT:

DESCRIPTION: Rt. 11 Bridge nearest Rt. 419.
RIVER MILE: 211.67
LATITUDE: 37.27111 **LONGITUDE:** -80.03884

The segment begins near Dixie Caverns (Glenvar Quad) extending downstream to the Rt. 11 Bridge nearest Rt. 419 crossing the Roanoke at river mile 211.67 (Salem Quad).

Note: Former 2002 State TMDL ID VAW-L03R-01N is now combined with VAW-L03R-02 in 2004.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting, Fish Consumption Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria, Temperature (2004), Fish Tissue - PCBs

Recreational Use

Station 4AROA227.42 is included in the 1999 Federal Consent Decree as a 1998 Attachment B station for fecal coliform bacteria. The Attachment B station represents approximately 9.25 miles from the confluence of the North and South Forks of the Roanoke River (VAW-L03R-01) downstream to an unnamed tributary at Dixie Caverns. The station was not listed in 2002 as exceedances of the former WQS 1000 cfu/100 ml instantaneous criterion are 5 percent. Three of 59 samples exceeded the former instantaneous criterion.

The recreational use is impaired based on bacteria samples from two stations. Station 4AROA227.42, located at the Rt. 773 Bridge in Lafayette, records seven of 59 fecal coliform bacteria samples exceed the 400 cfu/100ml instantaneous criterion in 2004 (Category 5A). Exceeding values range from 500 cfu/100 ml to 4300. Located on the Rt. 11 Bridge below Eaton station 4AROA212.17 finds eight of 41 fecal coliform bacteria samples exceed the instantaneous criterion. Exceeding values range from 500 cfu/100 ml to 4100.

Aquatic Life Use

Station 4AROA212.17 finds temperature exceeds the stockable trout water criterion of 21°C in eight of 42 measurements, most in the summer (Category 5C). Exceedances range from 22 to 25°C.

Biological collections at 4AROA212.17 find the benthic community slightly impaired resulting in an 'Observed Effect'. The slightly impaired benthic community extends from the mouth of Big Bear Branch downstream to the mouth of Mason Creek on the Roanoke River. This Fact Sheet describes a 6.06 mile portion of the overall 7.26 mile extent for this Fully Supporting 'Water of Concern'.

Rapid Biological Protocol II method produces 5 year scores of 61.19 in the Spring and 58.26 in the Fall. There are fewer taxa and fewer sensitive taxa at this site compared to the reference site (4AROA224.54). The modified family biotic index has consistently indicated a

Fact Sheets for Category 5 Waters

slight-to-moderate impact possibly from organic pollution. Less-than-normal rainfall in this part of the state may have affected assessments during the last several years. The benthic community at this site appears to be more sensitive to drought conditions than the reference site.

Fish consumption Use

This fact sheet describes an 11.68 mile portion of the DEQ human health-risk carcinogenic WQS tissue value (TV) impairment for polychlorinated biphenyls (PCBs). The waters do not support the fish consumption use due to exceedance of the WQS TV of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) and is categorized 5A.

Station 4AROA212.99, located on Rt. 612 Bridge at Wabum, finds no exceedances of the WQS TV or tissue screening values (TSVs) based on 1999 fish tissue collections from a total of 28 fish and three species. No exceedances of the WQS TV are observed from 2002 fish tissue collections at Station 4AROA216.33 (Salem, Below Koppers downstream of Rts. 760 & 639 junction) from 14 total fish and representing three species.

Station 4AROA216.33 1999 collections however find PCBs in excess of the WQS TV of 54 ppb in carp at 192 ppb from a total of 39 fish and five species. The 2002 fish consumption impairment remains due to exceedances of the DEQ WQS TV for PCBs, previous 2002 Listing and downstream stations exhibiting excursions of PCBs in tissue [Table 6(a); 2004 Assessment Guidance].

The total riverine DEQ fish consumption use impairment is 28.35 miles extending from Dixie Caverns in VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") approximately 1 mile below the Hales Ford Bridge. The total mileage for the DEQ fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

There is no Virginia Department of Health (VDH) fish consumption advisory in this portion of the Roanoke River. Fish tissue concentrations are below the VDH 600 ppb level of concern. A VDH Fish Consumption Advisory located downstream is encompassed by the overall DEQ WQS TV impairment. Information on the fish tissue sampling program can be viewed at <http://www.deq.state.va.us> and the VDH Advisory at <http://www.vdh.state.va.us>

IMPAIRMENT SOURCE: NPS - Urban, Unknown, Unknown

Recreational Use

Nonpoint source pollution is the believed source of the fecal coliform bacteria impairment. Possible contributing sources include primarily urbanization and some agricultural activity.

Aquatic Life Use

The exact source(s) contributing to the temperature impairment is not known but is believed due to natural solar radiation. Exceedances occur upstream of any significant heat sources. There are no known sources of heat contributing to impairment.

Fish Consumption Use

The exact sources of the PCB contamination are unknown.

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Salem
STREAM NAME: Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L03R-04
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 1.2 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Rt. 11 Bridge nearest Rt. 419.
RIVER MILE: 211.67
LATITUDE: 37.27111 **LONGITUDE:** -80.03884

DOWNSTREAM LIMIT:

DESCRIPTION: Confluence of Mason Cr. on the Roanoke R.
RIVER MILE: 210.47
LATITUDE: 37.26944 **LONGITUDE:** -80.02428

The segment begins at the Rt. 11 Bridge nearest Rt. 419 crossing the Roanoke River extending downstream to the Mason Creek mouth on the Roanoke at river mile 210.47 (Salem Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Fish Consumption Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria, Fish Tissue - PCBs

Recreational Use

The recreational use is impaired based on bacteria samples from two stations. Station 4AROA227.42, located at the Rt. 773 Bridge in Lafayette, records seven of 59 fecal coliform bacteria samples exceed the 400 cfu/100ml instantaneous criterion (Category 5A). Exceeding values range from 500 cfu/100 ml to 4300. Located on the Rt. 11 Bridge below Eaton station 4AROA212.17 finds eight of 41 fecal coliform bacteria samples exceed the instantaneous criterion. Exceeding values range from 500 cfu/100 ml to 4100.

Fish consumption Use

This fact sheet describes a 1.20 mile portion of the DEQ WQS tissue value (TV) impairment for polychlorinated biphenyls (PCBs). The waters do not support the fish consumption use due to exceedance of the DEQ human health-risk carcinogenic WQS tissue value (TV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs).

Station 4AROA212.99, located on Rt. 612 Bridge at Wabum, finds no exceedances of the WQS TV [Table 6(a), 2004 Assessment Guidance] or tissue screening values (TSVs) [Table 6(b), 2004 Assessment Guidance] based on 1999 fish tissue collections from a total of 28 fish representing three species. Station 4AROA216.33 (Salem, Below Koppers downstream of Rts. 760 & 639 junction) 2002 fish tissue collections find no exceedances either from 14 total fish and three species.

Station 4AROA216.33 1999 collections however find PCBs in excess of the WQS TV of 54 ppb in carp at 192 ppb from a total collection of 39 fish representing five species. The 2002 fish consumption impairment remains due to exceedances of the DEQ WQS TV for PCBs and the previous 2002 Listing from downstream stations exhibiting excursions of PCBs in fish tissue [Table 6(a), 2004 Assessment Guidance].

The total riverine DEQ fish consumption use impairment is 28.35 miles extending from Dixie Caverns in VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") ~1 mile below the Hales Ford Bridge. The total mileage for the DEQ fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

Fact Sheets for Category 5 Waters

There is no Virginia Department of Health (VDH) fish consumption advisory in this portion of the Roanoke River as described by this Fact Sheet. Fish tissue concentrations are below the VDH 600 ppb level of concern. A VDH Fish Consumption Advisory located downstream is encompassed by the overall DEQ TV impairment. Information on the fish tissue sampling program can be viewed at <http://www.deq.state.va.us> and the VDH Advisory at <http://www.vdh.state.va.us>

Aquatic Life Use

Biological collections at 4AROA212.17 find the benthic community slightly impaired resulting in an 'Observed Effect'. The slightly impaired benthic community extends from the mouth of Big Bear Branch downstream to the mouth of Mason Creek on the Roanoke River. This Fact Sheet describes a 1.20 mile portion of the overall 7.26 mile extent for this Fully Supporting 'Water of Concern'.

Rapid Biological Protocol II method produces 5 year scores of 61.19 in the Spring and 58.26 in the Fall. There are fewer taxa and fewer sensitive taxa at this site compared to the reference site. The modified family biotic index has consistently indicated a slight-to-moderate impact from organic pollution. Less-than-normal rainfall in this part of the state may have affected assessments during the last several years. The benthic community at this site appears to be more sensitive to drought conditions than the reference site (4AROA224.54).

IMPAIRMENT SOURCE: NPS - Urban, Unknown

Recreational Use

The source of the fecal coliform bacteria is believed to be from nonpoint source runoff in the urban area. The Roanoke Regional WPCP reached hydraulic capacity in 1985. At that point it began improving the collection system that transports wastewater to the plant. A new interceptor along the Roanoke River is complete with other improvements to the system along Tinker Creek also completed.

Fish Consumption Use

The exact sources of the PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

Aquatic Life Use - Water of Concern

The exact source for the slightly impaired benthic community is not known but is believed to be related to urban nonpoint sources and drought conditions that existed during the 2004 assessment data window.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke City, Salem
STREAM NAME: Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L04R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 9.87 - Miles
INITIAL LISTING: 1996
TMDL SCHEDULE: 2006
UPSTREAM LIMIT:

DESCRIPTION: Confluence of Mason Cr. on the Roanoke R.

RIVER MILE: 210.47

LATITUDE: 37.26944

LONGITUDE: -80.02428

DOWNSTREAM LIMIT:

DESCRIPTION: Roanoke Regional STP outfall on the Roanoke R.

RIVER MILE: 200.60

LATITUDE: 37.26667

LONGITUDE: -79.91083

The segment begins at the Mason Creek mouth on the Roanoke (river mile 210.47 on the Salem Quad) and extends downstream to the Roanoke Regional Water Pollution Control Plant at river mile 200.60 (Roanoke Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting, Fish Consumption Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (1996), General Standard (Benthic 1996), Fish Tissue - PCBs (2002)

Monitoring station locations are: 4AROA212.17 (Riverside Drive - Rt. 11 Bridge nearest Rt. 419), 4AROA206.80 (Wasena Park near Rt. 11/460 Bridge), 4AROA206.27 (Wasena Park), 4AROA206.03 (Smith Park), 4AROA205.67 (Riversedge Park - Below Franklin Rd. Br.) and 4AROA202.20 (14th Street Bridge - above STP).

Recreational Use

The basis of the recreational use impairment are data collected from two sites along the Roanoke River. Station 4AROA212.17 records eight exceedances of the fecal coliform bacteria criterion of 400 cfu/100 ml from 41 samples. Exceeding values range from 500 cfu/100 ml to 4100. Seventeen of 58 samples exceed the criterion at station 4AROA202.20 with exceeding values ranging from 500 to >8000 cfu/100 ml.

Aquatic Life Use

The aquatic life use is not supported based on biological monitoring at four sites 4AROA206.27, 4AROA206.03, 4AROA205.67 and 4AROA202.20. Each site reports the benthic community as moderately impaired.

Station 4AROA202.20 (five surveys) finds in a fall 2000 survey, the dominant family (40% of total individuals) are the pollution tolerant midge larvae, family Chironomidae. Less than 4% of all individuals collected were mayflies and approximately 50% of stream substrate was covered with heavy growths of filamentous algae. Stations 4AROA205.67 and 4AROA206.03 both report moderate impairment from a total of three surveys. Five surveys at 4AROA206.27 also find moderate impairment. The WQS General Standard (Benthic) is contravened for 9.87 miles in this segment based on these data. The entire General Standard (Benthic) impairment extends from the mouth of Mason Creek (VAW-L03R) downstream to the backwaters of the Niagara Impoundment (VAW-L04R), a total of 11.33 miles.

Fish Consumption Use

This fact sheet describes a riverine portion (9.87 miles) of the fish consumption use impairment (28.35 miles). The fish consumption use is

Fact Sheets for Category 5 Waters

impaired due to exceedance of the DEQ human health-risk carcinogenic WQS tissue value (TV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs).

Station 4AROA206.80 finds a PCB WQS TV exceedance from 1999 fish tissue collections in Rock Bass at 130 ppb. These results are based on 32 total fish representing three species. Impairment is due to proximity of PCB tissue exceedances both up and downstream from this location [Table 6(a), 2004 Assessment Guidance]. The 2002 Fish Consumption impairment remains.

The overall DEQ impairment extends from Dixie Caverns in VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") approximately one mile below the Hales Ford Bridge. The total mileage for the DEQ fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

There is no Virginia Department of Health (VDH) fish consumption advisory in this portion of the Roanoke River as described by this Fact Sheet. Fish tissue concentrations are below the VDH 600 ppb level of concern. A VDH Fish Consumption Advisory located downstream is encompassed by the overall DEQ WQS TV impairment. Information on the fish tissue sampling program can be viewed at <http://www.deq.state.va.us> and the VDH Advisory at <http://www.vdh.state.va.us>

IMPAIRMENT SOURCE: NPS - Urban, Natural / NPS - Urban, Unknown

Recreational Use

The source of the fecal coliform bacteria is believed to be a combination of nonpoint source runoff in the urban area and sanitary overflows. The Roanoke Regional WPCP reached hydraulic capacity in 1985. At that point it began improving the collection system that transports wastewater to the plant. A new interceptor along the Roanoke River is complete with other improvements to the system along Tinker Creek also completed.

Aquatic Life Use

Benthic impairments are believed due to urban nonpoint source runoff and sedimentation as a result of interceptor replacement along the Roanoke River.

Fish Consumption Use

The exact sources of the PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke, Roanoke City
STREAM NAME: Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L04R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.24 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2006

UPSTREAM LIMIT:

DESCRIPTION: Roanoke R. at the Roanoke Regional STP outfall
RIVER MILE: 200.60
LATITUDE: 37.26667 **LONGITUDE:** -79.91083

DOWNSTREAM LIMIT:

DESCRIPTION: Niagara Dam
RIVER MILE: 198.36
LATITUDE: 37.25448 **LONGITUDE:** -79.87551

The upper limit of the segment is the Roanoke Regional STP (river mile 200.60 outfall extending downstream to the Niagara Dam. The entire segment is on the Roanoke Quad.

Note: The segment has been adjusted from the 2002 segment (1.46 miles) by including the impounded waters of Niagara Dam. The General Standard (Benthic) ends at the backwaters of the impoundment.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting, Fish Consumption Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (1996), General Standard (Benthic 1996) - 1.46 mi., Fish Tissue - PCBs (2002)

Recreational Use

The recreational use is impaired based on fecal coliform bacteria data from two sites. Seventeen of 41 samples exceed the 400 cfu/100 ml fecal coliform bacteria criterion at station 4AROA202.20 (14th Street Bridge - above Regional STP). A downstream station 4AROA196.05 at McVeigh Ford located in Watershed (VAW-L12L) records fecal coliform bacteria exceedances in four of 28 samples. Tributary streams to this segment also find the recreational use impaired and are described in separate Fact Sheets for Watersheds VAW-L05R and VAW-L06R.

Aquatic Life Use

The aquatic life use is not supported for 1.46 miles; from the Roanoke Regional STP outfall downstream to the backwaters of the Niagara Impoundment (37°15'32" / 79°53'14"). The impairment is based on biological monitoring at three sites 4AROA202.20 (14th Street Bridge - above the Roanoke Regional STP), 4AROA205.67 (Rivers Edge Park below Franklin Rd. Br.), 4AROA206.03 (Smith Park) and 4AROA206.27 (Wasena Park). Each site reports the benthic community as moderately impaired.

Station 4AROA202.20 (five surveys) finds in a fall 2000 survey, the dominant family (40% of total individuals) are the pollution tolerant midge larvae, family Chironomidae. Less than 4% of all individuals collected were mayflies and approximately 50% of stream substrate was covered with heavy growths of filamentous algae. Stations 4AROA205.67 and 4AROA206.03 both report moderate impairment from a total of three surveys. Five surveys at 4AROA206.27 also find moderate impairment. The WQS General Standard (Benthic) is contravened for 9.87 miles in this segment based on these data. The entire General Standard (Benthic) impairment extends from the mouth of Mason Creek (VAW-L03R) downstream to the backwaters of the Niagara Impoundment (VAW-L04R), a total of 11.33 miles.

Fact Sheets for Category 5 Waters

Stations 4AROA199.78 and 199.60 located in or near the impounded waters of Niagara Dam find 'Observed Effects' due to excursions of the Consensus Based Probable Effects Concentraions (PEC) screening values (SV) [MacDonald et al., 2000] causing these waters to be a Water of Concern.

Station 4AROA199.78 finds in a 2002 sediment collection excursions for:

Chlorodane SV of 17.6 at 21 parts per billion (ppb),
Fluoranthene SV of 2230 at 2306 ppb,
Pyrene SV of 1520 at 1912 ppb and
Chrysene SV of 1290 at 1594 ppb.

Station 4AROA199.60 records from a 1999 sediment collection excursions for:

Silver (Ag) SV of 2.6 parts per million (ppm) at 2.8 ppm,
Chlorodane SV of 17.6 ppb at 27,
Fluoranthene SV of 2230 ppb at 2659 and
Pyrene SV of 1520 ppb at 2197.

Neither station records excursions of the PEC PCB SV of 676 ppb.

Fish Consumption Use

This fact sheet describes a riverine portion (2.24 miles, including Niagara impoundment- 0.78 miles) of the overall DEQ non-supporting fish consumption use impairment of 28.35 miles. The fish consumption use is not supported based on fish tissue exceedances of the DEQ human health-risk based carcinogenic WQS tissue value (TV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) [Table 6(a), 2004 Assessment Guidance]. Stations 4AROA199.78 (Impounded Niagara waters), 4AROA199.60 (Above Niagara Dam), and a downstream station 4AROA196.05 (McVeigh Ford) in watershed VAW-L12L record values in excess of the WQS PCB TV.

4AROA199.78 2002 fish tissue collections find two species exceed WQS PCB TV of 54 ppb. Golden Redhorse Suckers (two lengths-10 analyzed) at 63 and 110 ppb and four Carp at 163, 169, 226 and 439 (four lengths-13 analyzed) from a total of 36 fish representing 4 species.

Station 4AROA199.60 reports from a 1999 total collection of 23 fish representing four species PCB values in excess of the WQS PCB TV for three species. They are: Largemouth Bass at 272, Redhorse Sucker at 101, and Carp at 489 ppb. Downstream station 4AROA196.05 records from a 1999 collection of 40 fish representing five species values in excess of the fish tissue PCB TV for four species: Largemouth Bass at 73.7, Carp at 124, Gizzard Shad at 386 and Redhorse Sucker at 89.9 ppb.

2002 collections at Station 4AROA196.05 find from a total of 41 fish representing six species exceedances of the PCB WQS TV of 54 ppb for four species. They are: Largemouth Bass at 71, three Flathead Catfish at 1267, 1446 and 1117, a Gizzard Shad at 229 and two Golden Redhorse Suckers at 67 and 74 ppb each.

The entire DEQ impairment extends from near Dixie Caverns - VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") approximately one mile below the Hales Ford Bridge. The total mileage for the DEQ fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

There is no Virginia Department of Health (VDH) fish consumption advisory in this portion of the Roanoke River as described by this Fact Sheet. The advisory begins at Niagara Dam and extends approximately 9.5 miles downstream into Smith Mountain Lake (Buoy R78). The VDH Fish Consumption Advisory is encompassed by the overall DEQ WQS TV fish consumption impairment. Information on the fish tissue sampling program can be viewed at <http://www.deq.state.va.us> and the VDH Advisory at <http://www.vdh.state.va.us>

IMPAIRMENT SOURCE: NPS - Urban, NPS - Urban, Unknown

Recreational Use

The source of the fecal coliform bacteria is believed to be a combination of nonpoint source runoff in the urban area and sanitary sewer overflows. The Roanoke Regional WPCP reached hydraulic capacity in 1985. At that point it began improving the collection system that transports wastewater to the plant. A new interceptor along the Roanoke River is complete with other improvements to the system along Tinker Creek also completed.

Aquatic Life Use

Benthic impairments are believed due to urban nonpoint source runoff and sedimentation as a result of interceptor replacement along the Roanoke River.

Fish Consumption Use

The exact sources of the PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford, Roanoke
STREAM NAME: Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L04R-03
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 3.35 - Miles
INITIAL LISTING: 2002
TMDL SCHEDULE: 2006
UPSTREAM LIMIT:

DESCRIPTION: Niagara Dam

RIVER MILE: 198.36

LATITUDE: 37.25448

LONGITUDE: -79.87551

DOWNSTREAM LIMIT:

DESCRIPTION: Back Cr. mouth on the Roanoke R.

RIVER MILE: 195.01

LATITUDE: 37.22528

LONGITUDE: -79.84753

The upper limit of the segment is the Niagara Dam extending downstream to the confluence of Back Creek on the Roanoke River (river mile 195.00).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Fish Consumption Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria, Fish Tissue - PCBs (2002) - VDH Advisory 2003

Recreational Use

The recreational use is impaired based on fecal coliform bacteria data from two sites. Seventeen of 41 samples exceed the 400 cfu/100 ml fecal coliform bacteria criterion at station 4AROA202.20 (14th Street Bridge - above Regional STP). A downstream station 4AROA196.05 at McVeigh Ford located in Watershed (VAW-L12L) records fecal coliform bacteria exceedances in four of 28 samples. Tributary streams to this segment also find the recreational use impaired and are described in separate Fact Sheets for Watersheds VAW-L05R and VAW-L06R.

Fish Consumption Use

The Virginia Department of Health (VDH) issued a Fish Consumption Advisory on October 20, 2003. The advisory states to eat no more than one eight-ounce meal per month of flathead catfish from the advisory area (Niagara Dam to Buoy R78 in Smith Mountain Lake). These fish can travel far distances. It is also advisable that people limit consumption of flathead catfish caught from the entire lake. 2002 fish tissue collections are the basis for the advisory. Information on the VDH Flathead Catfish Advisory is available at <http://www.vdh.state.va.us>.

The entire DEQ fish tissue impairment extends from near Dixie Caverns - VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") approximately two miles below the Hales Ford Bridge. The total mileage for the DEQ fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

This fact sheet describes the riverine portion (3.35 miles) within the VDH advisory area of the overall DEQ nonsupporting fish consumption use impairment of 28.35 miles. The fish consumption use is not supported based on fish tissue exceedances of the DEQ human health-risk based carcinogenic WQS tissue value (TV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs). Upstream station 4AROA199.60 (Above Niagara Dam), and downstream station 4AROA196.05 (McVeigh Ford) in watershed VAW-L12L record values in excess of the DEQ WQS TV [Table 6(a), 2004 Assessment Guidance]. The 2002 fish consumption impairment remains.

Fact Sheets for Category 5 Waters

Station 4AROA199.60 reports from a 1999 total collection of 23 fish representing four species values in excess of the WQS TV for three species. They are: Largemouth Bass at 272, Redhorse Sucker at 101, and Carp at 489 ppb.

Station 4AROA196.05 records from a 1999 total of 40 fish representing five species tissue values in excess of the WQS PCB TV for four species: Largemouth Bass at 73.7, Carp at 124, Gizzard Shad at 386 and Redhorse Sucker at 89.9 ppb.

2002 collections at Station 4AROA196.05 find from a total of 41 fish representing six species exceedances of the WQS PCB TV of 54 ppb for four species. They are: Largemouth Bass at 71, three Flathead Catfish at 1117, 1267, and 1446, Gizzard Shad at 229 and 2 Golden Redhorse Suckers at 67 and 74 ppb each. Flathead Catfish tissue values are above the VDH 600 ppb level of concern.

The VDH Flathead Catfish Consumption Advisory is encompassed by the overall DEQ WQS TV fish consumption use impairment. The VDH Advisory extends from Niagara Dam downstream to Buoy R78 in Smith Mountain Lake incorporating 3.35 Roanoke River miles and approximately 378 lake acres.

Information on the DEQ fish tissue sampling program can be viewed at <http://www.deq.state.va.us>.

IMPAIRMENT SOURCE: NPS - Urban, Unknown

Recreational Use

The source of the fecal coliform bacteria is believed to be from nonpoint source runoff in the urban area and sanitary sewer overflows. The Roanoke Regional WPCP reached hydraulic capacity in 1985. At that point it began improving the collection system that transports wastewater to the plant. A new interceptor along the Roanoke River is complete with other improvements to the system along Tinker Creek also completed.

Aquatic Life Use

Benthic impairments are believed due to urban nonpoint source runoff and sedimentation as a result of interceptor replacement along the Roanoke River.

Fish Consumption Use

The exact sources of the PCB and chlorodane contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke, Roanoke City
STREAM NAME: Ore Branch
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L04R-04
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.42 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2006
UPSTREAM LIMIT:

DESCRIPTION: Headwaters in Hunting Hills.

RIVER MILE: 2.42

LATITUDE: 37.21750

LONGITUDE: -79.96667

DOWNSTREAM LIMIT:

DESCRIPTION: Ore Br. mouth on Roanoke R.

RIVER MILE: 0.00

LATITUDE: 37.25528

LONGITUDE: -79.95056

The segment extends from its headwaters downstream to the mouth of Ore Branch on the Roanoke River. The segment spans the Garden City and Roanoke Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4AORE000.19 located on Sherwood Avenue finds three of six samples exceeding the instantaneous criterion of 400 cfu/100 ml for fecal coliform bacteria. Exceeding values range from 500 cfu/100 ml to 3200. The recreational use is not supported.

IMPAIRMENT SOURCE: NPS - Urban

Recreational Use

The source of the impairment is believed to be urban nonpoint source pollution and possible interceptor overflows.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke, Salem
STREAM NAME: Mason Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L04R-05
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 7.61 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014
UPSTREAM LIMIT:

DESCRIPTION: Near Bennet Springs community.
RIVER MILE: 7.61
LATITUDE: 37.36449 **LONGITUDE:** -80.05132

DOWNSTREAM LIMIT:

DESCRIPTION: Mason Cr. mouth on the Roanoke R.
RIVER MILE: 0.00
LATITUDE: 37.26944 **LONGITUDE:** -80.02444

The segment begins near the Mason Cove Community, river mile 7.61 and extends downstream to the mouth of Mason Creek on the Roanoke River. The entire segment is on the Salem Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The following are locations of the stations discussed below: 4AMSN000.60 (Near A.R. Burton Tech.), 4AMSN000.67 (Boulevard), 4AMSN002.36 (East Main St.-Rt. 460/11), 4AMSN003.36 (Garst St), 4AMSN006.92 (Carvin Cove Rd-Rt. 604), and 4AMSN012.62 (Bradshaw Rd-Rt. 622).

The recreational use remains impaired based on a 1997 special study (SS 975101). These data are outside the 2004 Assessment data window but are the basis for the 2002 303(d) Impaired Waters Listing. Each station found exceedances of the fecal coliform bacteria geometric mean criterion of 200 cfu/100 ml on Mason Creek. Stations 4AMSN000.67, 4AMSN003.36 and 4AMSN006.92 exceed in three of three calculations derived from the special study data. 4AMSN002.36 exceeds in two of three calculations. Station 4AMSN012.62 had no exceedances of the geometric mean criterion. The waters as described above therefore do not support the recreational use.

Aquatic Life Use

The segment is also a fully supporting Water of Concern. Station 4AMSN000.60 finds 'Observed Effects' from a 1999 exceedance of the sediment Consensus Based Probable Effects Concentrations (PEC) screening values (SV) [McDonald et al., 2000]. The sediment PEC SV exceedances are Fluoranthene (SV 2230) 3774 parts per billion (ppb), Pyrene (SV 1520) 3030 ppb, Benz(a)anthracene (SV 1050) 1086 ppb and Chrysene (SV 1290) 1543 ppb.

IMPAIRMENT SOURCE: NPS - Urban

Recreational Use

Urban nonpoint source runoff is the primary source of the fecal coliform bacteria impairment.

Aquatic Life Use

Fact Sheets for Category 5 Waters

The source(s) of sediment organic exceedances are unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke, Roanoke City
STREAM NAME: Peters Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L04R-06
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 7.17 - Miles
INITIAL LISTING: 2002
TMDL SCHEDULE: 2014
UPSTREAM LIMIT:

DESCRIPTION: Peters Cr. Headwaters
RIVER MILE: 7.17
LATITUDE: 37.34722
LONGITUDE: -80.03000

DOWNSTREAM LIMIT:

DESCRIPTION: Peters Cr. mouth on the Roanoke R.
RIVER MILE: 0.00
LATITUDE: 37.27306
LONGITUDE: -79.99278

The segment begins in the headwaters of Peters Creek (Salem Quad) extending downstream to the Peters Creek confluence on the Roanoke River (Roanoke Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Fish Consumption Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (2002) - 7.17 mi., Fish Tissue - PCBs (2004) - 2.52 mi.

Recreational Use

Special study (SS 975101) station 4APEE001.04 found exceedances of the fecal coliform bacteria geometric mean criterion of 200 n/100 ml in two of three calculations derived from the special study data. These data are outside the 2004 Assessment data window but are the original basis for listing the use impaired in 2002.

Station 4APEE001.04 is located at the Shenandoah Avenue Bridge crossing Peters Creek. Six of 18 fecal coliform samples demonstrate the use remains impaired. All in excess of the 400 cfu/100 ml WQS instantaneous criterion. Exceeding values range from 500 cfu/100 ml to >8000. The recreational use is not supported for 7.17 miles based on the exceedance of the fecal coliform geometric mean criterion found in the 1997 special study data and the existing ambient instantaneous exceedances.

Fish Consumption Use

The use is not supported for 2.53 miles based on the proximity of the stations described below. The polychlorinated biphenyls (PCBs) fish consumption impairment extends from Melrose Avenue (37°17'47" / 80°00'26") to the Peters Creek mouth on the Roanoke River (37°16'23" / 79°59'34"). The fish consumption impairment is a 2004 addition. All DEQ fish tissue data can be viewed at <http://www.deq.state.va.us>.

Station 4APEE001.04, located downstream of the Shenandoah Avenue Bridge, reveals 1999 fish tissue exceeds the DEQ human health-risk based carcinogenic screening value for PCBs based upon the WQS tissue value (TV) of 54 ppb in Rockbass at 68 ppb [Table 6(a), 2004 Assessment Guidance]. These results are based on a total of 28 fish representing 3 species.

4APEE000.49, located downstream of the Shenandoah Avenue Bridge also finds in a 2002 fish tissue collection an exceedance for PCB WQS TV in Rockbass at 57 ppb. These results are based on a total of 20 fish representing 3 species.

Aquatic Life Use

Fact Sheets for Category 5 Waters

A 2.53 mile portion of Peters Creek is also a 'Water of Concern' based on a 1999 ambient sediment collection. Analysis reveals exceedances of the Consensus Based Probable Effects Concentrations (PEC) [MacDonald et al. 2000] screening value (SV) for chlorodane (SV 17.6 ppb) at 30 ppb. And a WQS 1999 sediment collection finds PEC SV exceedances for:

Total Polyaromatic Hydrocarbons-PAH (SV 22800) at 26300 ppb

Fluoranthene (SV 2230) at 4903 ppb

Pyrene (SV 1520) at 3990 ppb

Benz(a)anthracene (SV 1050) at 1696 ppb

Chrysene (SV 1290) at 1543 ppb

Benzo(a)pyrene (SV 1450) at 2003 ppb

Dibenz(a,h)anthracene (SV 318) at 543 ppb.

IMPAIRMENT SOURCE: NPS - Urban, Unknown

Recreational Use

The source of the fecal coliform bacteria is believed to be urban nonpoint source pollution.

Fish Consumption Use

The exact source of the PCB contamination is unknown. The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds.

Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

Aquatic Life Use

The source of sediment exceedances are unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke, Roanoke City
STREAM NAME: Murray Run
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L04R-07
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 3.23 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016
UPSTREAM LIMIT:

DESCRIPTION: Murray Run headwaters.

RIVER MILE: 3.23

LATITUDE: 37.22511

LONGITUDE: -79.99100

DOWNSTREAM LIMIT:

DESCRIPTION: Murray Run mouth on the Roanoke R.

RIVER MILE: 0.00

LATITUDE: 37.25776

LONGITUDE: -79.95692

The segment begins at the headwaters of Murray Run in Cave Spring and extends downstream to its mouth on the Roanoke River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4AMUR001.63 finds fecal coliform bacteria exceeds the 400 cfu/100 ml instantaneous criterion in two of six observations. Exceeding values are 600 and 8000+ cfu/100 ml. The recreational use is not supported.

IMPAIRMENT SOURCE: NPS - Urban

Recreational Use

Urban nonpoint source is the believed source of the bacteria contamination.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Botetourt, Roanoke, Roanoke City
STREAM NAME: Tinker Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L05R-01
ASSESSMENT CATEGORY: 5A/5C
SEGMENT SIZE: 19.38 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: Tinker Cr. headwaters off Rt. 779
RIVER MILE: 19.38
LATITUDE: 37.44778 **LONGITUDE:** -79.97250

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth of Tinker Cr. on the Roanoke R.
RIVER MILE: 0.00
LATITUDE: 37.26639 **LONGITUDE:** -79.90500

The upper limit is off Rt. 779 near Mt. Union (Daleville Quad) in the headwaters of Tinker Creek. The downstream limit is at the confluence of Tinker Creek with the Roanoke River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria, Temperature (1998) - 11.90 mi.

2004 assessed ambient, TMDL and fish tissue stations are 4ATKR015.88 (Off Rt. 779 at USGS Gage), 4ATKR009.30 (Rt. 11 Bridge near Hollins), 4ATKR000.69 (Rt. 24 Bridge in Vinton) and 4ATKR000.17 (Mouth of Tinker Creek). And citizen station 4ATKR-1-SOS (downstream of 4ATKR009.30 near Rt. 601). Station 4ATKR000.69 was overlisted by the US Environmental Protection Agency as an Attachment A overlist for temperature in 1998.

Recreational Use

The Bacteria TMDL Study for the Tinker Creek drainage is complete with anticipated U.S. Environmental Protection Agency (EPA) approval by spring 2004.

Current ambient collections at 4ATKR015.88 find fecal coliform bacteria in excess of the 400 cfu/100 ml instantaneous criterion in four of eight samples. Exceeding values range from 600 to greater than 16000 cfu/100 ml. Escherichia coli (E. coli) samples reveal one exceedance of the 235 cfu/100 ml instantaneous criterion from three samples but is insufficient to assess. The excessive value is greater than 800 cfu/100 ml.

Station 4ATKR009.30 reports two of nine fecal coliform samples exceed the 400 cfu/100 ml instantaneous criterion from ambient collections. Exceeding values are 1200 and 5400 cfu/100 ml. Escherichia coli (E. coli) samples reveal one exceedance of the 235 cfu/100 ml instantaneous criterion from three samples but is insufficient to assess. The single exceedance is greater than 800 cfu/100 ml.

Current ambient data at 4ATKR000.69 find fecal coliform bacteria instantaneous criterion exceedances in 25 of 59 observations. Exceeding values range from 500 cfu/100 ml to greater than 8000. Three of five E. coli samples exceed the instantaneous criterion of 235 cfu/100 ml. Maxima range from 260 to over 800 cfu/100 ml.

The extent of the bacteria impaired segment was originally defined by a 1997 special study (SS 975101). These data, although over 5

Fact Sheets for Category 5 Waters

years old confirmed the continuation of 303(d) listing for fecal coliform bacteria. Each station exceeds the 200 cfu/100 ml geometric mean criterion in two of two calculations. They are:

4ATKR000.69 - Rt. 24 Bridge - Vinton
4ATKR001.80 - Rt. 460
4ATKR005.68 - Hollins Rd (Rt. 601)
4ATKR009.30 - Rt. 11 Bridge - near Hollins
4ATKR012.28 - Rt. 816, Botetourt Co.
4ATKR015.88 - Off Rt. 779 - at Gage
4ATKR016.64 - Off Rt. 779, Botetourt Co.

2002 exceedances of the former 1000 cfu/100 ml instantaneous fecal coliform bacteria criterion occurred on more than one occasion at each station as well.

Aquatic Life Use

This segment was overlisted by the US EPA in 1998 for temperature (Attachment A-Overlist, 1999 Federal Consent Decree).

The segment is impaired for temperature for 11.90 miles from the Rt. 11 Bridge in Cloverdale (37°22'23" / 79°54'17") downstream to the mouth of Tinker Creek on the Roanoke River (37°15'59" / 79°54'16").

Temperature exceeds the stockable trout water criterion (21°C) in two of eight measurements in data from station 4ATKR009.30. Temperature exceedances are 23°C (6/04/2002) and 25 °C (8/08/2001). Station 4ATKR000.69 (Attachment A station) reports three of 56 measurements exceed the Class V temperature criterion although Fully Supporting from assessed data. Exceedances occur on 7/22/1999 (23°C), 6/13/2000 (22°C) and 8/08/2001 (23°C). The segment remains impaired for temperature due to exceedances upstream (Category 5C).

An 11.90 mile portion of the segment is a 'Water of Concern' based on results from Citizen station 4ATKR-1-SOS and sediment analysis. The single Citizen 2001 Modified method survey reports 'Unacceptable' overall conditions or a high probability for adverse conditions to the benthic community. Sediment analysis reveals exceedances of the Consensus Based Probable Effects Concentrations (PEC) screening values (SV) [MacDonald et al.2000] for sediment.

Stations 4ATKR000.17 and 4ATKR000.69 report excursions of the sediment SVs in 1999 and 2002 WQS sediment collections respectively reported as Observed Effects. Sediment results from two samples at each station follow:

4ATKR000.69

1999 Sediment PEC SV exceedances for:

Metals parts per million (ppm)
TKR(A) Lead (Pb SV 128) at 244
TKR(A) Silver (Ag SV 2.6) at 2.7

Organics parts per billion (ppb)

TKR(A) Chlorodane (SV 17.6) at 84
TKR(B) Chlorodane at 18
TKR(A) DDT (SV 62.9) at 86
TKR(A) Total PCB (SV 676) at 941
TKR(A) Total PAH (SV 22800) at 34359
TKR(A) Acenaphthylene (SV 121) at 185
TKR(A) Acenaphthene (SV 170) at 276
TKR(A) Phenanthrene (SV 1170) at 5072
TKR(A) Anthracene (SV 845) at 1594
TKR(A) Fluoranthene (SV 2230) at 5066
TKR(B) Fluoranthene at 3652
TKR(A) Pyrene (SV 1520) at 6062
TKR(B) Pyrene at 3101
TKR(A) Benz(a)anthracene (SV 1050) at 2464
TKR(B) Benz(a)anthracene at 1310
TKR(A) Chrysene (SV 1290) at 1752
TKR(A) Benzo(a)pyrene (SV 1450) at 1763
TKR(A) Dibenzo(a,h)anthracene (SV 318) at 327.

4ATKR000.17

2002 Sediment PEC SV exceedances for:

Metals (ppm)
Q34-1 Pb (SV 128) at 117
Q34-2 Pb (SV 128) at 127

Organics (ppb)

Q34-1 Chlorodane (SV 17.6) at 30
Q34-2 Chlorodane (SV 17.6) at 26
Q34-1 DDD (SV 28) at 33

Fact Sheets for Category 5 Waters

Q34-2 Benzo(a) Pyrene (SV 1450) at 1485.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban, Unknown

Recreational Use

The source of the fecal coliform bacteria impairment is believed to be urban nonpoint source pollution and possible episodic sanitary sewer overflows from the mouth of Tinker Creek upstream to approximately river mile 12.58 in Botetourt County (Daleville Quad) near the Roanoke Gas Company. Agricultural nonpoint source pollution is the believed source of impairment from approximately river mile 12.58 to the headwaters of Tinker Creek in Botetourt County.

Aquatic Life Use

The source of the temperature exceedances are believed to be from natural solar radiation. Exceedances are recorded in a largely urban drainage.

The source of the sediment metal and organics exceedances are unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke, Roanoke City
STREAM NAME: Carvin Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L05R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 5.35 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Upstream of I-81, at an unnamed tributary.
RIVER MILE: 5.35
LATITUDE: 37.36333 **LONGITUDE:** -79.95224

DOWNSTREAM LIMIT:

DESCRIPTION: Carvin Cr. mouth on Tinker Cr.
RIVER MILE: 0.00
LATITUDE: 37.31944 **LONGITUDE:** -79.92953

The segment begins just upstream of I-81 at the mouth of an unnamed tributary and extends downstream to the mouth of Carvin Creek on Tinker Creek. The entire segment is on the Roanoke Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The Bacteria TMDL Study for the Tinker Creek drainage is complete with anticipated U.S. Environmental Protection Agency (EPA) approval by spring 2004.

Station 4ACRV005.58 (Plantation Road -Rt. 115) finds fecal coliform bacteria exceeds in one sample at 600 cfu/100 ml. The exceedance is in excess of the instantaneous criterion of 400 cfu/100 ml.

Two of seven fecal coliform bacteria results exceed the current 400 cfu/100 ml instantaneous criterion at station 4ACRV001.88. Exceedances are 500 and 1100 cfu/100 ml. The station is located in Brookside Park off Rt. 623.

A 1997 special study station, 4ACRV000.28 (Plantation Rd Rt. 115), found exceedances of the 200 n/100 ml fecal coliform bacteria geometric mean criterion in two of two calculations derived from special study data (SS 975101). 1997 instantaneous criterion exceedances of the former 1000 cfu/100 ml occur in two of seven observations at 5400 and >8000 cfu/100 ml; an additional basis for the 2002 Impaired Waters Listing. The data for this station are older than 5 years.

IMPAIRMENT SOURCE: NPS - Urban / Residential

Recreational Use

Urban nonpoint source runoff is the believed source of the impairment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Botetourt, Roanoke, Roanoke City
STREAM NAME: Glade Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L05R-03
ASSESSMENT CATEGORY: 5A/5C
SEGMENT SIZE: 12.61 - Miles
INITIAL LISTING: 1998
TMDL SCHEDULE: 2004
UPSTREAM LIMIT:

DESCRIPTION: Glade Cr. headwaters in Botetourt County.

RIVER MILE: 12.61

LATITUDE: 37.39750

LONGITUDE: -79.81741

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth of Glade Cr. on Tinker Cr.

RIVER MILE: 0.00

LATITUDE: 37.27694

LONGITUDE: -79.90896

The segment begins in the Glade Creek headwaters on the Stewartsville Quad and extends downstream to its confluence with Tinker Creek at river mile 0.83. The segment ends on the Roanoke Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria, Temperature (2002) - 6.86 mi.

Recreational Use

The Bacteria TMDL Study for the Tinker Creek drainage is complete with anticipated U.S. Environmental Protection Agency (EPA) approval by spring 2004.

Station 4AGLA004.39 located on Layman Road (Rt. 606) finds fecal coliform bacteria exceed the 400 cfu/100 ml instantaneous criterion in eight of eight analyses. The exceedances range from 790 cfu/100 ml to greater than 16000. Two of two Escherichia coli (E. coli) observations exceed the instantaneous criterion of 235 cfu/100 ml at 240 and greater than 800.

4AGLA000.20 located on the Walnut Avenue Bridge in Vinton finds three of nine instantaneous criterion exceedances of 400 cfu/100 ml for fecal coliform bacteria from ambient collections. Exceedances range from 600 to 9200 cfu/100 ml. One of three E. coli samples exceed the 235 instantaneous criterion at greater than 800 cfu/100 ml.

Nonsupport of the recreational use is found from 1997 special study data (SS 975101). The data for these stations are older than 5 years with fecal coliform geometric mean exceedances (200 cfu/100 ml) at each station. Instantaneous criterion exceedances were the basis for the original 1998 5.75 mile Impaired Waters Listing. Special Study stations are:

4AGLA000.20 - Walnut Avenue Bridge - Vinton
4AGLA001.60 - Berkeley Rd (Rt. 653)
4AGLA004.39 - Layman Rd (Rt. 606)
4AGLA005.75 - Webster Rd (Rt. 738)
4AGLA008.10 - Rt. 723

Station 4AGLA008.10 has one of two calculations exceed the fecal coliform bacteria geometric mean.

Fact Sheets for Category 5 Waters

Aquatic Life Use

There are no current data available other than that from the original 2002 Impaired Waters Temperature Listing. A 1997 special study station 4AGLA008.10, SS 975101, records three exceedances from seven measurements of the 20°C temperature criterion for this Class VI natural trout water. The temperature exceedances occur in the months of June (20.7°C), July (21.7°C) and August (21.8°C). The 6.86 mile segment lies in the upper portion of the Glade Creek mainstem. The segment extends from the mouth of Coyner Spring Branch (37°20'07" / 79°51'31" upstream to the Glade Creek headwaters (37°20'06" / 79°51'31"). The waters remain impaired for temperature (Category 5C).

A downstream portion of Glade Creek from the mouth of Cook Creek on down to the Glade Creek confluence with Tinker Creek is a 'Water of Concern' based on results of citizen benthic data. Two single survey stations indicate a high probability of adverse conditions to the benthic community and are reported as Observed Effects. They are 4AGLA-2-SOS- Bio and 4AGLA-SOS where 2002 Modified survey Methods are employed (Category 3C).

IMPAIRMENT SOURCE: NPS - Urban, Unknown

Recreational Use

The source of the fecal coliform bacteria impairment is believed to be primarily urban nonpoint source runoff and possible episodic sanitary sewer overflows.

Aquatic Life Use

The source of the temperature exceedances are believed to be naturally occurring from solar radiation.

The source of degraded benthic conditions observed in citizen data are unknown. However urban nonpoint source runoff is the likely source.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke, Roanoke City
STREAM NAME: Lick Run
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L05R-04
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 8.51 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: Near Shaffer's crossing rail yard.
RIVER MILE: 8.51
LATITUDE: 37.33536 **LONGITUDE:** -79.99689

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth of Lick Run on Tinker Cr.
RIVER MILE: 0.00
LATITUDE: 37.27972 **LONGITUDE:** -79.91861

The upper limit is near Shaffers Crossing rail yard and headwaters from along I-581 on downstream to the mouth of Lick Run on Tinker Creek at river mile 1.41. The 1996, 1998 and 2002 Impaired Waters segment has expanded by 5.01 miles with the 2004 List. The entire segment is on the Roanoke Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The Bacteria TMDL Study for the Tinker Creek drainage is complete with anticipated U.S. Environmental Protection Agency (EPA) approval by spring 2004.

Station 4ALCK002.17 Located in Washington Park, Roanoke City, finds fecal coliform bacteria exceed the 400 cfu/100 ml instantaneous criterion in three of three samples. Exceeding values are 790, 1300 and 9200 cfu/100 ml. Two of three Escherichia coli (E. coli) samples exceed the 235 cfu/100 ml instantaneous criterion. Exceeding values are 420 and greater than 800 cfu/100 ml.

The impaired segment brackets an ambient and 1997 special study station at the Norfolk Southern parking lot bridge (4ALCK000.38). Fecal coliform bacteria exceed the instantaneous criterion of 400 cfu/100 ml in 19 of 33 samples based on ambient collections at 4ALCK000.38.

1997 special study data from 4ALCK000.38 (SS 975101) reveals exceedances of the fecal coliform bacteria geometric mean criterion of 200 cfu/100 ml. Two of two calculations exceed the criterion as derived from special study data. These data as well as instantaneous criterion exceedances are the basis for the 1996, 1998 and 2002 Impaired Waters Listing.

IMPAIRMENT SOURCE: NPS - Urban

Recreational Use

The source is urban nonpoint source runoff and possible episodic sanitary sewer overflows.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Botetourt
STREAM NAME: Laymantown Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L05R-05
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.08 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Upstream of Rt. 657 at pond.
RIVER MILE: 2.08
LATITUDE: 37.36194 **LONGITUDE:** -79.85048

DOWNSTREAM LIMIT:

DESCRIPTION: Laymantown Cr. mouth on Glade Cr.
RIVER MILE: 0.00
LATITUDE: 37.33667 **LONGITUDE:** -79.85654

The segment begins just upstream of the Rt. 657 Bridge at a small pond. The segment ends at the mouth of Laymantown Creek on Glade Creek. The entire segment is on the Stewartsville Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The Bacteria TMDL Study for the Tinker Creek drainage is complete with anticipated U.S. Environmental Protection Agency (EPA) approval by spring 2004.

No current data are available for this site within the 2004 Assessment data window. A 1997 special study station 4ALAY000.37 (Rt. 460 Bridge - near Blue Ridge) found exceedances of the fecal coliform bacteria geometric mean criterion of 200 cfu/100 ml in two of two calculations derived from the special study data (SS 975101). These data are older than five years. A total of seven samples were collected, none exceed the former instantaneous criterion of 1000 cfu/100 ml. Four of the seven samples would exceed the current 400 cfu/100 ml instantaneous criterion with exceedances ranging from 500 to 800 cfu/100 ml. The recreational use impairment remains.

IMPAIRMENT SOURCE: NPS - Urban / Residential

Recreational Use

Urban/Residential nonpoint source runoff is believed to be the source of the impairment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Roanoke
STREAM NAME: Back Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L06R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 9.92 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016
UPSTREAM LIMIT:

DESCRIPTION: Rt. 220 near Red Hill.
RIVER MILE: 9.92
LATITUDE: 37.18033 **LONGITUDE:** -79.93440

DOWNSTREAM LIMIT:

DESCRIPTION: Back Cr. mouth on the Roanoke R.
RIVER MILE: 0.00
LATITUDE: 37.22528 **LONGITUDE:** -79.84753

The Back creek segment begins just downstream of Rt. 220 near Red Hill and extends downstream to the mouth of Back Creek on the Roanoke River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use
Station 4ABAA002.61, located on the Rt. 660 Bridge at the U.S. Geological Survey gaging station, finds fecal coliform bacteria exceeds the 400 cfu/100 ml instantaneous criterion in three of 19 samples. Exceeding observations are 500, 2400 and 3700 cfu/100 ml.

IMPAIRMENT SOURCE: NPS- Agriculture / Urban / Wildlife

Recreational Use
Contributing sources are believed to include Agricultural activities, Urban nonpoint source and possible wildlife contributions.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford
STREAM NAME: Beaverdam Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L07R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 5.58 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2010

UPSTREAM LIMIT:

DESCRIPTION: Headwaters-end of perennial section
RIVER MILE: 8.30
LATITUDE: 37.26917 **LONGITUDE:** -79.74972

DOWNSTREAM LIMIT:

DESCRIPTION: Beaverdam Cr. impounded waters
RIVER MILE: 2.72
LATITUDE: 37.21389 **LONGITUDE:** -79.74972

The segment begins at the upstream limit of perennial stream in the headwaters and extends downstream to the impounded waters of Beaverdam Creek at river mile 2.78. The segment spans the Stewartville, Irving, Goodview and Hardy Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The 1999 Federal Consent Decree includes 4ABDA003.63 as a 1998 Attachment B station for fecal coliform bacteria. The station exceeded the former 1000 cfu/100 ml instantaneous criterion in 3 of 23 samples (13%) in 2002 and is 303(d) Listed.

Nonsupport of the recreational use continues at 4ABDA003.63 (Off Rt. 757) with exceedances of the current fecal coliform bacteria instantaneous criterion of 400 cfu/100 ml. Two of 18 observations exceed the criterion at 1400 and greater than 8000 cfu/100 ml.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban

Recreational Use

The source of fecal coliform bacteria is believed to be a mix of urban and agricultural nonpoint source runoff. Wildlife contributions are also possible sources.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: Green Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L08R-01
ASSESSMENT CATEGORY: 5C/4A
SEGMENT SIZE: 3.93 - Miles
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Perennial headwaters of Green Cr.
RIVER MILE: 3.93
LATITUDE: 37.10209 **LONGITUDE:** -80.09027

DOWNSTREAM LIMIT:

DESCRIPTION: Green Cr. mouth on S.F. Blackwater R.
RIVER MILE: 0.00
LATITUDE: 37.05361 **LONGITUDE:** -80.08493

Green Creek's perennial headwaters begin the segment that extends downstream to its mouth on the South Fork of Blackwater River. The entire segment is on the Callaway Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (1998), Temperature (2002)

Recreational Use

The Bacteria Total Maximum Daily Load (TMDL) Study and allocations for the South Fork of the Blackwater River is complete. Green Creek is tributary to the South Fork and is included in the TMDL Study and allocations. The segment is therefore Category 4A for bacteria with the U.S. Environmental Protection Agency (EPA) approval of the study on 02/02/2001. The Implementation Plan for the Blackwater River drainage is also complete as of 8/23/2001. Ultimately the TMDL Study and allocations will be incorporated into the 303(e) Water Quality Management Plans. The entirety of the approved study and allocations and Implementation Plan can be viewed at <http://www.deq.state.va.us>.

The South Fork Blackwater River segment is originally based on data from a 319 funded special study (SS 925102) and ambient bacteria collections. The impaired segment, initially 303(d) Listed in 1996, found abundant fecal coliform bacteria counts failed to support the recreational use by exceedances of both the existing geometric mean (200 cfu/100 ml) and former instantaneous criterion of 1000 cfu/100 ml. Green Creek was originally 303(d) Listed in 1998.

Station 4AGCR000.01 (Rt. 739 Bridge at Algoma) finds two of 10 fecal coliform bacteria test results in excess of the current 400 cfu/100 ml instantaneous criterion. Exceedances are 700 and 1000 cfu/100 ml. No *Escherichia coli* (E. Coli) bacteria collections have been made. The waters do not support the recreational use.

Aquatic Life Use

The 2002 temperature impairment remains as 4AGCR000.01 reveals two of 15 temperature measurements exceeding the Class VI natural trout water criterion of 20°C. Each exceedance is at 23°C occurring on 7/11/2001 and 21°C on 9/18/2002. The aquatic life use is not supported as a result (Category 5C).

Fact Sheets for Category 5 Waters

IMPAIRMENT SOURCE: NPS - Agriculture - 1998, Unknown

Recreational Use

Bacteria source tracking utilized in the TMDL study demonstrates that wildlife is the dominant contributor of fecal coliform bacteria with agriculture second. Direct deposition at baseflow is the critical condition.

Aquatic Life Use

The source of temperature exceedances are not known other than natural solar radiation. There are no known sources of heat that would contribute to the exceedances.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: North Fork of the Blackwater River Drainage
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L08R-03
ASSESSMENT CATEGORY: 5D
SEGMENT SIZE: 12.25 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: Headwaters of the N.F. Blackwater R
RIVER MILE: 12.25
LATITUDE: 37.16278 **LONGITUDE:** -80.05773

DOWNSTREAM LIMIT:

DESCRIPTION: Confluence of North and South Forks
RIVER MILE: 0.00
LATITUDE: 37.02472 **LONGITUDE:** -80.02676

The segment begins approximately 12.25 miles upstream in the North Fork headwaters on the Bent Mt. Quad. The segment ends on the Callaway Quad at the North Fork's confluence with the South Fork at the head of the Blackwater River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (1996) - 12.25 mi., General Standard (Benthic) - 3.26 mi.

Recreational Use

The North Fork of the Blackwater River Bacteria Total Maximum Daily Load (TMDL) Study and allocations are complete. The waters are therefore Category 4A for bacteria with the US Environmental Protection Agency (EPA) approval of the study on 03/09/2001. The TMDL Study applies to the entire North Fork drainage. Ultimately the TMDL Study and allocations will be incorporated into the 303(e) Water Quality Management Plans. The Implementation Plan is complete (8/23/2001) and incorporates the N.F. Blackwater River. The entirety of the approved TMDL Study allocations and Implementation Plans can be viewed at <http://www.deq.state.va.us>.

The North Fork Blackwater River segment is originally based on a 319 funded special study (SS 925102) data and ambient fecal coliform bacteria sample collections. The impaired segment, initially 303(d) Listed in 1996, found abundant fecal coliform bacteria counts failed to support the recreational use by exceedances of both the existing geometric mean (200 cfu/100 ml) and former instantaneous criterion of 1000 cfu/100 ml.

Monitoring continues at station 4ABNR000.40 where 18 of 29 fecal coliform bacteria analyses exceed the current instantaneous criterion of 400 cfu/100 ml. Maxima range from 575 cfu/100 ml to greater than 8000. *Escherichia coli* (E. coli) exceed the 235 cfu/100 ml instantaneous criterion in 13 of 20 observations. Exceeding values range from 350 to greater than 800 cfu/100 ml. Wildlife is a major source for FC via TMDL Bacteria Source Tracking (BST). The segment does not support the recreational use.

Aquatic Life Use

Contravention of the General Standard remains 303(d) listed as the benthic community is moderately impacted at 4ABNR000.40 and slightly impacted at 4ABNR001.53 from Rapid Biological Protocol II (RBP II) surveys. The impaired benthic community extends 3.26 miles upstream from the confluence of the North and South Forks of the Blackwater River- Category 5D. The General Standard (Benthic) impairment is not addressed in the EPA approved Bacteria TMDL Study.

Fact Sheets for Category 5 Waters

A General Standard (Benthic) TMDL Study has been conducted with an anticipated approval by the U. S. EPA in early 2004. The 3.26 mile segment remains Category 5A until federal approval has been granted. The segment brackets biological stations at 4ABNR000.40 (Rt. 740 Bridge SW of Retreat, VA) and 4ABNR001.53 (Rt. 738 Bridge).

Station 4ABNR000.40 reports a RBP II five year average Spring score 56.01 and Fall score 52.33 from 8 surveys. The instream habitat (substrate) at this site has been impacted by fine sediment. The riparian zone vegetation has been removed and stream banks are highly eroded due to unrestricted cattle access to the stream.

Station 4ABNR001.53 finds from three RBP II Spring surveys an average score of 85.92. Moderate impairment from a single 2000 survey occurs where the benthic community includes several pollution tolerant taxa with Chironomid midge fly larvae (tolerant of sediment and low dissolved oxygen) being the dominant organism. 2001 and 2002 surveys indicate no impairment each with a spring score of 90.48.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife, NPS - Agriculture

Recreational Use

Bacteria source tracking utilized in the TMDL study demonstrates that wildlife is the dominant contributor of fecal coliform bacteria with agriculture second. Direct deposition at baseflow is the critical condition.

Aquatic Life Use

The believed source of the General Standard (Benthic) impairment is nonpoint source runoff from agricultural activity, lack of riparian vegetation and stream bank erosion/modification.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: Blackwater River Drainage
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L08R-04
ASSESSMENT CATEGORY: 5D
SEGMENT SIZE: 43.83 - Miles
INITIAL LISTING: 1996 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: Confluence of N.F./S.F. Blackwater R.
RIVER MILE: 60.16
LATITUDE: 37.02472 **LONGITUDE:** -80.02676

DOWNSTREAM LIMIT:

DESCRIPTION: Backwaters of Smith Mountain Lake.
RIVER MILE: 20.46
LATITUDE: 37.06250 **LONGITUDE:** -79.76962

The upstream limit of the segment is at the confluence of the North and South Forks of the Blackwater River (Callaway Quad). The segment's end is at the backwaters of Smith Mountain Lake. (Redwood Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (1996), General Standard (Benthic 1998) - 5.63 mi.

Recreational Use

Bacteria Total Maximum Daily Load (TMDL) Studies and allocations are complete for the Upper, Middle and Lower Blackwater River drainages. These studies incorporate tributary streams that lie within the boundaries of VAW-L08R and VAW-L10R. The waters are Category 4A for bacteria with the US Environmental Protection Agency (EPA) approval of the Upper Blackwater Study on 03/09/2001, the Middle on 12/04/2001 and the Lower on 04/27/2001. The Implementation Plan is complete as of 8/23/2001. Ultimately the TMDL Study allocations will be incorporated into the 303(e) Water Quality Management Plans. The entirety of the approved studies with allocations and the Implementation Plan can be viewed at <http://www.deq.state.va.us>.

The Blackwater River segment is originally based on a 319 funded special study (SS 925102) data and ambient fecal coliform bacteria sample collections. The impaired segment, initially 303(d) Listed in 1996, found abundant fecal coliform bacteria counts failed to support the recreational use by exceedances of both the existing geometric mean (200 cfu/100 ml) and former instantaneous criterion of 1000 cfu/100 ml.

Exceedances of the 400 cfu/100 ml instantaneous criterion for fecal coliform bacteria continue at station 4ABWR061.20 (Rt. 641 Bridge) with 20 of 30 samples exceeding. Nineteen of 29 samples exceed at 4ABWR054.81 (Rt. 734 Bridge). Station 4ABWR045.80 (Rt. 812 Bridge) continues to report 17 exceedances from 38 samples and station 4ABWR032.32 (Rt. 122 Bridge at the stream gaging station) reports criterion excursions in 11 of 20 samples. Monitoring continues at station 4ABWR019.75 (Rt. 834 Bridge or Brooks Mill Bridge) where 15 of 59 samples exceed. 4ABWR019.75 is located within VAW-L12L. The maximum fecal coliform bacteria count at each station is greater than 8000 cfu/100 ml.

Escherichia coli bacteria (E. coli) results from the sites above show exceedances of the 235 cfu/100 ml instantaneous criterion. The results for each site are 4ABWR061.20 exceeds in 13 of 18 samples; 4ABWR054.81 in 19 of 29; 4ABWR045.80 in 8 of 20 and 4ABWR032.32 in 6 of 20. No E. coli collections are made at 4ABWR019.75. Maximums at each sampled site are greater than 800 cfu/100 ml.

Fact Sheets for Category 5 Waters

A 2004 addition to the original bacteria 39.70 mile impairment is a 4.13 mile segment on Foul Ground Creek. The segment begins at the confluence of the Foul Ground Creek headwaters (37°01'45" / 79°47'28") and extends downstream to its inundation on the Blackwater River in Smith Mountain Lake (37°03'03" / 79°45'26").

Station 4AFGC002.52 located on the Rt. 834 Bridge finds five of 11 fecal coliform bacteria samples exceed the 400 cfu/100 ml instantaneous criterion. Exceeding values range from 500 cfu/100 ml to greater than 8000.

Tributary ambient and TMDL data from the North and South Forks of the Blackwater River, Green, Little and Teels Creeks also report exceedances of the instantaneous fecal coliform and E. coli bacteria criteria. These tributary segments are described in separate fact sheets.

Aquatic Life Use

A General Standard (Benthic) TMDL Study nears completion with an anticipated U.S. EPA approval in early 2004. The original 1996 General Standard benthic impairment was based on Green Creek (Blue Ridge) as a reference site. The reference site for the Blackwater River mainstem stations is now in the Pigg River drainage (transitional Blue Ridge to Piedmont). The Pigg River reference site is believed to more closely reflect conditions in the Blackwater River mainstem.

The original 1996 303(d) Listed benthic impaired waters extend from the confluence of the North and South Forks of the Blackwater River on downstream of the Rt. 921 Bridge approximately 1.3 miles at the confluence of an unnamed tributary (25.29 miles). The impaired segment is shortened with the 2004 Integrated Report based on improved conditions at 4ABWR049.73 and 4ABWR045.80 through Rapid Bioassessment Protocol II (RBP II) benthic surveys. The US Environmental Protection Agency approved the partial de-listing on January 27, 2004 via the 'Pro-Active Approach'. The General Standard (Benthic) impairment is now a distance of 5.63 miles- Category 5D.

The 2004 General Standard (Benthic) impairment extends from the confluence of the North and South Forks of the Blackwater River downstream to the mouth of Maple Branch. A total of 5.63 miles. Station 4ABWR061.20 finds only slight impairment. Rapid Biological Protocol II (RBP II) survey scores for 2000 are: Spring 52.17 and Fall 78.26. The 2002 Spring score is 76.19. Five year seasonal averages are Spring 60.56 and Fall 66.29. Water quality in this reach is affected by NPS pollution from dairy operations, primarily the North Fork of the Blackwater River. Habitat degradation in the form of sediment deposition and riparian vegetation removal occurs at this sight as a result of agricultural practices. This area was affected by several drought years during the 2004 assessment period. Less runoff of nonpoint source pollution during low rainfall periods potentially resulted in an improvement in the benthic community. Additionally, recent installation of agricultural best management practices in the watershed have contributed to improved water quality. A 5.63 mile portion of the overall segment remains impaired (Category 5D) as at least two consecutive 'not impaired' (NI) RBP II surveys must be observed before delisting may occur [2004 Assessment Guidance]. The 5.63 mile segment will become a Category 4A water upon U.S. EPA approval of the General Standard (Benthic) TMDL Study and allocations.

Overall 19.66 miles are 2004 de-listed for the General Standard (Benthic) impairment. Recent installation of agricultural best management practices have contributed to improved water quality conditions. A separate de-list fact sheet describes the partially de-listed segment, RBP II survey data and installation of best management practices within the watershed.

A 20.68 mile section is also a 'Water of Concern' for exceedances found in total phosphorus (TP) data. Station 4ABWR054.81 reports four of 29 TP samples exceed the screening value (SV) of 0.20 mg/l. Exceedances range from a low of 0.23 mg/l to a high of 0.82. The Water of Concern extends from the confluence of the North and South Forks of the Blackwater River downstream to the Town of Rocky Mount water intake on the Blackwater River. These results are reported as an 'Observed Effect' in the 2004 Integrated Report.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife, NPS - Agriculture

Recreational Use

Direct deposition at baseflow is the critical condition in the Blackwater River. Bacteria source tracking utilized in the studies show wildlife as the dominant contributor of fecal coliform bacteria in the upper and middle portions of the drainage with agriculture second. The Lower Blackwater is more of a mix of land use activity and upstream contributions.

Aquatic Life Use

The 1998 source of the General Standard (Benthic) impairment is nonpoint source runoff from agricultural activity. The shortened segment was 1998 listed and remains listed for General Standard (benthic) impairments. The Blackwater drainage lies both in the Blue Ridge and Piedmont ecoregions.

The source of total phosphorus is believed to be contributions from agricultural activities.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: Little Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L08R-05
ASSESSMENT CATEGORY: 5D
SEGMENT SIZE: 7.61 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: West of the Helm community off Rt. 693.
RIVER MILE: 7.61
LATITUDE: 37.07667 **LONGITUDE:** -79.96890

DOWNSTREAM LIMIT:

DESCRIPTION: Little Cr. mouth on the Blackwater R.
RIVER MILE: 0.00
LATITUDE: 37.04750 **LONGITUDE:** -79.90941

The segment begins just west of Helm off Rt. 693 and extends to the Little Creek mouth on the Blackwater River. The entire segment is on the Boones Mill Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (2002), General Standard (Benthic 2002)

Recreational Use

The Middle Blackwater River Bacteria Total Maximum Daily Load (TMDL) Study and allocations are complete (Category 4A for Bacteria). The Implementation Plan is also complete as of 8/23/2001. Little Creek is tributary to the Blackwater River and is included in this bacteria TMDL Study. The segment is therefore Category 4A for bacteria with the U.S. Environmental Protection Agency (EPA) approval of the Middle Blackwater Study on 12/04/2001. Ultimately the TMDL Study and allocation scenarios will be incorporated into the 303(e) Water Quality Management Plans. The entirety of the approved TMDL Study with allocations and the Implementation Plan can be viewed at <http://www.deq.state.va.us>.

The Blackwater River segment is originally based on a 319 funded special study (SS 925102) data and ambient fecal coliform bacteria sample collections. The impaired segment, initially 303(d) Listed in 1996, found abundant fecal coliform bacteria counts failed to support the recreational use by exceedances of both the existing geometric mean (200 cfu/100 ml) and former instantaneous criterion of 1000 cfu/100 ml. Little Creek is initially 303(d) Listed in 2002.

Monitoring continues at 4ALLE005.22 (Rt. 697 Bridge) where 19 of 29 fecal coliform bacteria samples exceed the current instantaneous criterion of 400 cfu/100 ml. Exceeding values range from 500 cfu/100 ml to 3800.

Fifteen *Escherichia coli* (*E. coli*) samples exceed the 235 cfu/100 ml instantaneous criterion from a total of 17 collections. The exceeding values range from 280 to greater than 800 cfu/100 ml. The segment remains impaired for the recreational use.

Aquatic Life Use

A biological Rapid Bioassessment Protocol II (RBP II) survey reports moderate impacts to the benthic community. The aquatic life use is not supported due to contravention of the General Standard for aquatic life (Category 5A). The General Standard (benthic) impairment is not addressed in the EPA approved Middle Blackwater Bacteria TMDL Study. The General Standard (Benthic) impairment is a 2002 303(d)

Fact Sheets for Category 5 Waters

Listing.

Three RPB II surveys conducted in the spring produce two moderate and one slightly impaired result at station 4ALLE005.22. RBP II scores are 60.0 in 2000, 47.62 in 2001 and 57.14 in 2002. The average score for the station is 54.92. The benthic community in Little Creek has consistently been less diverse than the reference site and was dominated by Hydropsychid caddisfly larvae in the summer and Chironomid midge larvae in the spring samples. The assemblages collected at this site indicate excessive organic matter, excessive nutrients, embedded substrates and removal of riparian buffers.

These waters are also a 'Water of Concern' based on excursions of the 0.20 mg/l total phosphorus screening value (SV) at 4ALLE005.22. Data collections record seven of 29 observations in excess of the SV resulting in 'Observed Effects'. Exceedances occur in 1999, 2000 and 2001 with a maximum value of 0.36 mg/l in April 2000. Total phosphorus maxima range from 0.21 to 0.36 mg/l.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife, NPS - Agriculture

Recreational Use

Bacteria source tracking utilized in the TMDL study demonstrates that wildlife is the dominant contributor of fecal coliform bacteria with agriculture second. Direct deposition at baseflow is the critical condition.

Aquatic Life Use

Agricultural nonpoint source runoff is the believed source of the General Standard (benthic) impairment and total phosphorus excursions.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: Teels Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L08R-06
ASSESSMENT CATEGORY: 5D
SEGMENT SIZE: 4.6 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2004

UPSTREAM LIMIT:

DESCRIPTION: Perennial headwaters of Teels Cr.
RIVER MILE: 4.60
LATITUDE: 37.09417 **LONGITUDE:** -79.96687

DOWNSTREAM LIMIT:

DESCRIPTION: Teels Cr. mouth on Little Creek.
RIVER MILE: 0.00
LATITUDE: 37.05778 **LONGITUDE:** -79.91817

The perennial headwaters of Teels Creek begin the segment that ends at the mouth of Teels Creek on Little Creek. The entire segment is on the Boones Mill Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (2002), General Standard (Benthic 2002)

Recreational Use

The Middle Blackwater River fecal coliform bacteria Total Maximum Daily Load (TMDL) Study with allocations is complete. Teels Creek is tributary Little Creek then onto the Blackwater River and is included in the study. The segment is therefore Category 4A for Bacteria with the US Environmental Protection Agency (EPA) approval of the Middle Blackwater Study on 12/04/2001. The Implementation Plan is complete as of 8/23/2001. Ultimately the TMDL Study will be incorporated in the 303(e) Water Quality Management Plans. The entirety of the approved study with allocations and the Implementation Plan can be viewed at <http://www.deq.state.va.us>.

The Blackwater River segment is originally based on a 319 funded special study (SS 925102) data and ambient fecal coliform bacteria sample collections. The impaired segment, initially 303(d) Listed in 1996, found abundant fecal coliform bacteria counts failing to support the recreational use by exceedances of both the existing geometric mean (200 cfu/100 ml) and former instantaneous criterion of 1000 cfu/100 ml. Teels Creek is originally 303(d) Listed in 2002.

Fecal coliform bacteria observations reveal continued exceedance of the existing 400 cfu/100 ml instantaneous criterion. Station 4ATEL001.02 (Rt. 697 Bridge) finds 23 of 29 fecal coliform bacteria analyses exceed the instantaneous criterion. Exceedances range from 500 cfu/100 ml to greater than 8000.

Station 4ATEL001.02 also reports *Escherichia coli* (E. coli) bacteria exceed the 235 cfu/100 ml instantaneous criterion in 14 of 17 analyses. The maximum exceedance is greater than 800 and the lowest 260 cfu/100 ml. The segment remains impaired for the recreational use.

Aquatic Life Use

The aquatic life use is impaired for 4.60 miles. The impairment is based on biological monitoring at 4ATEL001.02 from four Rapid Biological Protocol II (RBP II) surveys. Overall moderate benthic impairment 4ATEL001.02 is the result of three spring and one fall survey

Fact Sheets for Category 5 Waters

with an overall average score of 63.88. 1999 and 2000 spring surveys score 47 with a 2002 survey at 90.48. The 2002 score may be related to reduced runoff as a result of drought conditions. However the assemblages collected at this site indicate excessive organic matter, and embedded substrates. Habitat surveys also indicate impacts from sediment deposition, eroded banks and removal of riparian buffers. The benthic impairment is a 2002 addition to this segment.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife, NPS - Agriculture

Recreational Use

Bacteria source tracking utilized in the TMDL study demonstrates that wildlife is the dominant contributor of fecal coliform bacteria with agriculture second. Direct deposition at baseflow is the critical condition.

Aquatic Life Use

The believed source of the impairment is agricultural activity in the drainage.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: Maggodee Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L09R-01
ASSESSMENT CATEGORY: 5D
SEGMENT SIZE: 20.21 - Miles
INITIAL LISTING: 1996
TMDL SCHEDULE: 2014

UPSTREAM LIMIT:

DESCRIPTION: Rt. 613 Bridge
RIVER MILE: 20.21
LATITUDE: 37.14583
LONGITUDE: -80.00995

DOWNSTREAM LIMIT:

DESCRIPTION: Maggodee Cr. mouth on Blackwater R.
RIVER MILE: 0.00
LATITUDE: 37.05194
LONGITUDE: -79.82739

The upstream limit is Rt. 613 Bridge near the intersection with Rt. 726 where the North and South Forks of Maggodee Creek join. The downstream limit is at the mouth of Maggodee Creek on the Blackwater River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE:

 Bacteria, General Standard (Benthic) - 7.38 mi.

Recreational Use

The Maggodee Creek Bacteria Total Maximum Daily Load (TMDL) Study with allocations is complete. The study incorporates tributary streams that lie within the boundaries of watershed VAW-L09R. The waters are Category 4A for bacteria with the U.S. Environmental Protection Agency (EPA) approval of the Maggodee Creek Study on 04/27/2001. The entirety of the approved study with allocations can be viewed at <http://www.deq.state.va.us>.

Maggodee Creek was originally listed in 1996 based on a 319 funded special study (SS 925102) and ambient sample collections. Abundant fecal coliform bacteria counts failed to support the recreational use by exceedances of both the geometric mean (200 n/100 ml) and former instantaneous criterion of 1000 n/100 ml.

Fecal coliform and *Escherichia coli* (E. coli) bacteria continue to cause nonattainment of the recreational use. Stations 4AMEE009.86 (Rt. 635 Bridge), 4AMEE007.85 (Rt. 687 Bridge above Mollie Br.), 4AMEE004.90 (Rt. 697 Bridge) and 4AMEE002.38 (Rt. 698 Ford) all record exceedances of the current instantaneous criterion of 400 cfu/100 ml. The recreational use is not supported due to fecal coliform exceedances at the following stations; 11 of 20 samples exceed at 4AMEE009.86, eight of 19 at 4AMEE007.85, 12 of 15 at 4AMEE004.90 and station 4AMEE002.38 records one of six exceedances. Monitoring at 4AMEE002.38 is discontinued as of 4/06/2000 due to lack of access. All but 4AMEE002.38 record fecal coliform values in excess of 2000 cfu/100 ml.

Escherichia coli (E. coli) bacteria collections produce the following exceedances of the 235 cfu/100 ml instantaneous criterion: Station 4AMEE009.86- seven of 16 samples with exceedances ranging from 280 to greater than 800 cfu/100 ml. Station 4AMEE007.85 eight of 17 and an exceedance range from 240 to greater than 800 cfu/100 ml. And Station 4AMEE004.90 nine of 17 observations exceed. The range of exceedance is from 310 cfu/100 ml to greater than 800.

Aquatic Life Use

Fact Sheets for Category 5 Waters

Non-support of the aquatic life use is originally based on Rapid Bioassessment Protocol II surveys (RBP II) conducted at 4AMEE002.38. The station is no longer accessible and is moved to 4AMEE000.70 (Below Rt. 122 Bridge). Four RBP II surveys find moderate impacts to the benthic community largely due to sedimentation. The aquatic life use impairment is a 2002 addition that spans 7.38 miles from the Piedmont Mill dam downstream to Maggodee Creek confluence with the Blackwater River in Franklin County. The Maggodee Creek Bacteria TMDL study did not address the General Standard (Benthic) impairment.

Excursions of the 0.20 mg/l total phosphorus screening value (SV) cause 14.82 miles of Maggodee Creek to be a 'Water of Concern' for the aquatic life use. Exceedances are found in three stations along Maggodee Creek. Stations include: 4AMEE04.90 (Rt. 697 Bridge), 4AMEE007.85 (Rt. 687 Bridge), 4AMEE009.86 (Rt. 635 Bridge).

4AMEE004.90 has three of 21 samples and 4AMEE007.85 two of 19 exceeding the screening value. The maximum values are 0.37, 0.60 and 4.57mg/l at 4AMEE004.90. Station 4AMEE007.85 maximums are 0.24 and 0.83 mg/l. Two of 20 samples exceed at 4AMEE009.86 (the exceedance rate is not above 10.5%). Maximum values are 0.22 and 0.63 mg/l. The total phosphorus 'Observed Effect' extends from the Boones Mill STP downstream to the Maggodee Creek mouth on the Blackwater River.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban, NPS - Agriculture

Recreational Use

Bacteria source tracking utilized in the TMDL study show agriculture and wildlife as the major contributors of fecal coliform bacteria in the Maggodee Creek drainage.

Aquatic Life Use

The source of the General Standard (Benthic) impairment is believed to be mainly from agricultural nonpoint source pollution.

Total phosphorus contributions are believed to be primarily the result of nonpoint source agricultural activities in this 'Water of Concern'.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford, Franklin
STREAM NAME: Smith Mountain Lake - Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L12L-02N
ASSESSMENT CATEGORY: 5C/4C
SEGMENT SIZE: 5308 - Acres
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Upstream of Beckys Cr. mouth on Roanoke R.
RIVER MILE: 173.34
LATITUDE: 37.13000 **LONGITUDE:** -79.65476

DOWNSTREAM LIMIT:

DESCRIPTION: Blackwater R. confluence on the Roanoke R.
RIVER MILE: 164.84
LATITUDE: 37.04194 **LONGITUDE:** -79.59429

The segment begins above the Beckys Creek mouth (Goodview Quad) on the Roanoke River and extends downstream 8.50 miles to the confluence of the Blackwater River (Smith Mtn. Dam Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: pH / Dissolved Oxygen (Bottom)

Aquatic Life Use
Station 4AROA167.34 is located within this segment at Buoy 12R.

Surface Layer: Station 4AROA167.34 reports three of 27 measurements in excess of the alkaline maximum 9.0 Standard Units (SU). Each exceedance is measured at 9.1 SU (Category 5C).

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. Station 4AROA167.34-BL records 149 of 454 measurements below the minimum criterion. The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs. The 2002 dissolved oxygen impairment remains.

The Carlson Trophic State Index (TSI) is used to determine the cause of the dissolved oxygen impairment eg. natural or anthropogenic in nature. The following are the index scores from three stations where CA = chlorophyll (a), TP = total phosphorus and SD = seechi disk (transparency).

4AROA167.34-TL CA [36.34] TP [44.72] SD [44.78].

TSI scores below 60 indicate a natural aging process in the reservoir while above 60 indicates man's activities on the land may be influencing the natural aging of the reservoir. The data above, primarily SD, indicates a natural aging process for the this segment of the Roanoke River portion of Smith Mountain Lake (Category 4C).

Fact Sheets for Category 5 Waters

IMPAIRMENT SOURCE: Unknown, Natural / Stratification

Aquatic Life Use

The exact source of the pH alkaline exceedance is not known but is believed due to natural conditions created in reservoirs.

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

Informational note: Smith Mountain Lake is designated by Virginia's Water Quality Standards as a Nutrient Enriched Water (9 VAC 25-260-350 A.1.; NEW-1). The Water Quality Management Planning (WQMP) Regulation also lists Smith Mountain Lake as water quality limited for phosphorus (9 VAC 25-720-80 B. Segment classification).

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford, Franklin
STREAM NAME: Smith Mountain Lake - Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L12L-03
ASSESSMENT CATEGORY: 5A/5C/4C
SEGMENT SIZE: 2871 - Acres
INITIAL LISTING: 2002
TMDL SCHEDULE: 2014
UPSTREAM LIMIT:

DESCRIPTION: Falling Cr. mouth on the Roanoke R.

RIVER MILE: 188.91

LATITUDE: 37.23250

LONGITUDE: -79.84753

DOWNSTREAM LIMIT:

DESCRIPTION: Upstream of Beckys Cr. mouth on Roanoke R.

RIVER MILE: 173.34

LATITUDE: 37.13000

LONGITUDE: -79.65476

The segment begins at the Falling Creek mouth and extends downstream 15.57 miles to upstream of the Beckys Creek confluence on the Roanoke River. The segment spans the Hardy and Goodview Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Fish Tissue - PCBs, pH (Surface- 2002) / Dissolved Oxygen (Bottom- 2002)

The segment brackets mainstem lake stations 4AROA183.64 at the mouth of Beaverdam Creek, 4AROA180.21 at the confluence with Indian Creek and 4AROA175.63 at Hales Ford Bridge.

Fish Consumption Use

1998 fish collections at 4AROA175.63-TL find polychlorinated biphenyls (PCBs) in excess of the human health-risk carcinogenic WQS tissue value (TV) of 54 parts per billion (ppb) in tissue from Striped Bass. Fish tissue results for four sizes of Striped Bass are 58.0, 84.7, 107.0 and 198.0 ppb. A total of 44 fish represent three species: Striped Bass (35), Smallmouth Bass (4) and Gizzard shad (5).

1999 fish collections find no exceedances of the WQS TV from a total of 26 fish. Species represented are Largemouth Bass, Bluegill, Carp and Redhorse Sucker.

2002 collections find exceedances of the WQS PCB TV in two of three sizes of Striped Bass at 64 and 219 ppb from a total of 24 fish. Species represented are Striped Bass (10), Largemouth Bass (5), Carp (4) and Gizzard Shad (5).

There is no Virginia Department of Health (VDH) Advisory as tissue concentrations are below the VDH action level of 600 ppb. Information on the fish tissue sampling program can be viewed at <http://www.deq.state.va.us/water/>

Aquatic Life Use

Top layer: Two stations report exceedances of the pH range criterion 6.0-9.0 Standard Units (SU) in the surface waters of Smith Mountain Lake resulting in the impairment of the aquatic life use. All exceedances were above the 9.0 SU alkaline range. Exceedances of the criterion occur at 4AROA183.64-TL, 4AROA180.21-TL and 4AROA175.63-TL. Five of 28 pH measurements exceed the criterion at 4AROA183.64-TL with exceedances ranging from 9.1 to 9.9 SU. And four of 28 at 4AROA180.21-TL exceeding values ranging from 9.1 to 9.8 SU. Station 4AROA175.63-TL records two of 28 measurements exceeding the criterion, but are fully supporting (<10.5 percent). These

Fact Sheets for Category 5 Waters

results are categorized as 5C.

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. 4AROA183.64-BL reports 158 excursions from 240 measurements, 4AROA180.21 159 of 314 and 4AROA175.63 exceeds the minimum in 147 of 342. The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs. The 2002 dissolved oxygen impairment remains.

The Carlson Trophic State Index (TSI) is used to determine the cause of the dissolved oxygen impairment eg. natural or anthropogenic in nature. The following are the index scores from three stations where CA = chlorophyll (a), TP = total phosphorus and SD = seechi disk (transparency).

4AROA183.64-TL CA [56.63] TP [49.15] SD [56.78].

4AROA180.21-TL CA [53.53] TP [46.35] SD [56.32].

4AROA175.63-TL CA [47.33] TP [41.50] SD [52.28].

TSI scores below 60 indicate a natural aging process in the reservoir while above 60 indicates man's activities on the land may be influencing the natural aging of the reservoir. The data above, primarily SD, indicates a natural aging process in this portion of Smith Mountain Lake- Category 4C.

These waters are a 'Water of Concern based on exceedance of total phosphorus and sediment screening values (SV). Total phosphorus exceedances of the 0.05 mg/l reservoir SV are found at 4AROA183.64-BL and 4AROA180.21-BL causing the waters to be reported as having an 'Observed Effect'. Eight of 43 samples exceed the threshold at 4AROA183.64-BL and five of 41 at 4AROA180.21-BL. Station 4AROA183.64.05-BL exceeding values range from 0.06 to 0.17 mg/l. 4AROA180.21-BL maxima range from 0.06 to 0.10 mg/l. It is important to note that no excursions of the chlorophyll (a) SV of 0.05 mg/l are found from 24 samples at each station.

An excursion of the Consensus Based Probable Effects Concentration (PEC) [MacDonald et al., 2000] sediment screening value (SV) is found at 4AROA175.63-BL. A 1999 ambient sediment collection reports lead (Pb) at 263 ppb in excess of the PEC SV of 128 ppb.

IMPAIRMENT SOURCE: Unknown, Natural / Stratification

Fish Consumption Use

The exact source(s) of the PCB contamination is unknown.

The Virginia Department of Health (VDH) PCB action level is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment. Other information on VDH fish consumption advisories, prohibitions or bans can be viewed at <http://www.vdh.state.va.us>

Aquatic Life Use

The exact source of the pH alkaline exceedance is not known but is believed due to natural conditions created in reservoirs.

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

Total phosphorus sources are believed to be a mix of nonpoint source contributions from upstream urban areas (VAW-L04R) and marginal agricultural activity in the immediate drainage (VAW-L07R) to Smith Mountain Lake.

Informational Note: Smith Mountain Lake is designated by Virginia's Water Quality Standards as a Nutrient Enriched Water (9 VAC 25-260-350 A.1.; NEW-1). The Water Quality Management Planning (WQMP) Regulation also lists Smith Mountain Lake as water quality limited for phosphorus (9 VAC 25-720-80 B. Segment classification).

The exact source of the sediment metal contamination is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford, Franklin, Roanoke
STREAM NAME: Smith Mountain Lake - Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L12L-04
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 378 - Acres
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2010
UPSTREAM LIMIT:

DESCRIPTION: Back Creek mouth on Roanoke River (795 ft. pool elevation)

RIVER MILE: 195.00

LATITUDE: 37.22528

LONGITUDE: -79.84753

DOWNSTREAM LIMIT:

DESCRIPTION: Falling Cr. mouth on Roanoke R. SML

RIVER MILE: 188.91

LATITUDE: 37.23250

LONGITUDE: -79.78214

The segment begins at the mouth of Back Creek on the Roanoke River at the dead end of Rt. 618 and extends downstream to the mouth of Falling Creek on the Roanoke River, 6.09 miles in length. The entire segment is on the Hardy Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Fish Consumption Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria, Fish Tissue - PCBs (2002) - 378 acres; VDH Advisory 2003, Dissolved Oxygen (Bottom 2002)

The segment brackets lake stations 4AROA196.05 McVeigh Ford, 4AROA192.94 just upstream of the Rt. 634 (Hardy Road) Bridge and 4AROA192.55 at the Rt. 634 (Hardy Road) Bridge (surface sample collections from Bridge).

Recreational Use

Surface layer: Fecal coliform bacteria continue to cause the segment to only partially support the recreational use. Station 4AROA196.05-TL records four of 28 samples in excess of the 400 cfu/100 ml fecal coliform bacteria instantaneous criterion. Exceeding values range from 500 to 4900 cfu/100 ml. Station 4AROA192.94-TL finds three of 23 samples with exceeding values ranging from 500 to 4900 cfu/100 ml. And 4AROA192.55-TL records 13 out of 56 samples exceeding the instantaneous criterion with exceedances ranging from 500 to greater than 8000 cfu/100 ml. The segment remains 303(d) Listed as Category 5A.

Fish Consumption Use

The Virginia Department of Health (VDH) issued a Fish Consumption Advisory on October 20, 2003. The advisory states to eat no more than one eight-ounce meal per month of flathead catfish from the advisory area (Niagara Dam to Buoy R78, ~2 miles downstream of Hardy Ford Bridge in Smith Mountain Lake). These fish can travel far distances. It is also advisable that people limit consumption of flathead catfish caught from the entire lake. 2002 fish tissue collections are the basis for the advisory. Information on the VDH Flathead Catfish Advisory is available at <http://www.vdh.state.va.us>.

The entire DEQ fish tissue impairment extends from near Dixie Caverns - VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") approximately one mile below the Hales Ford Bridge. The total mileage for the DEQ fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

This Fact Sheet presents information on the reservoir portion of the VDH Advisory. The riverine Fact Sheet and information is found at VAW-L04R-03. The VDH Flathead Catfish Consumption Advisory is encompassed by the overall DEQ WQS TV fish consumption use

Fact Sheets for Category 5 Waters

impairment. The VDH Advisory extends from Niagara Dam downstream to Buoy R78 in Smith Mountain Lake incorporating 3.35 Roanoke River miles and approximately 378 lake acres.

1999 fish tissue collections at 4AROA196.05-TL reveal polychlorinated biphenyls (PCBs) in excess of the human health-risk carcinogenic WQS tissue value (TV) of 54 parts per billion (ppb) in four of five species from a total of 40 fish. They are: Largemouth Bass - 74, Carp - 124, Gizzard Shad- 386, Redhorse Sucker - 90 and Bluegill -26 ppb.

2002 collections at Station 4AROA196.05 report from a total of 41 fish representing six species exceedances of the WQS PCB TV of 54 ppb for four species. They are: Largemouth Bass at 71, three sizes of Flathead Catfish at 1117, 1267, and 1446, Gizzard Shad at 229 and two sizes of Golden Redhorse Suckers at 67 and 74 ppb each. Flathead Catfish tissue values are above the VDH 600 ppb level of concern.

These waters do not support the fish consumption use and is categorized 5A. Information on the fish tissue sampling program can be viewed at <http://www.deq.state.va.us/water/>

Aquatic Life Use

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. Depth profiles at 4AROA192.55 were not conducted and stations 4AROA196.05 and 192.94 were not stratified. However exceedances of the minimum criterion are found as described below. The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs. The 2002 dissolved oxygen 303(d) Listing is categorized 5A in 2004.

The waters were not stratified primarily due to the depth of the reservoir at the following sites. The entire water column data are therefore combined at each site. Dissolved oxygen did not exceed the minimum criterion in greater than 10.5 percent of the samples. However excursions did occur at 4AROA196.05 in one of 56 measurements and at 4AROA192.94 in two of 70 measurements.

The Carlson Trophic State Index (TSI) is used to determine the cause of the dissolved oxygen excursions eg. natural or anthropogenic in nature. The following are the index scores from the three stations where CA = chlorophyll (a), TP = total phosphorus and SD = seechi disk (transparency).

4AROA196.05-TL CA [39.90] TP [65.85] SD [64.94].
4AROA192.94-TL CA [61.33] TP [60.75] SD [65.66].
4AROA192.55-TL CA [66.32] TP [63.89] SD [No Readings].

TSI scores below 60 indicate a natural aging process in the reservoir while above 60 indicates man's activities on the land may be influencing the natural aging of the reservoir. The data above, primarily SD, indicates this segment is influence by man's activities on the land and is speeding up the natural process. As a result the waters are categorized 5A.

Total phosphorus exceedances of the 0.05 mg/l threshold for reservoirs are found at 4AROA196.05-TL, 4AROA192.94-TL and 4AROA192.55-TL causing the waters to be 'Waters of Concern'. Eleven of 28 total phosphorus samples exceed 0.05 mg/l at 4AROA196.05-TL and nine of 23 at 4AROA192.94-TL. Station 4AROA192.55 records 31 of 60 samples exceeding the threshold.

Station 4AROA196.05-TL exceeding values range from 0.06 to 0.22 mg/l. 4AROA192.94-TL maxima range from 0.06 to 0.11 mg/l. Exceedances range from 0.06 to 0.20 mg/l at 4AROA192.55-TL. These results are reported as Observed Effects. No chlorophyll (a) excursions are found from 24 samples each at 4AROA196.05 or 4AROA192.94. One exceedance of the chlorophyll (a) 50 µg/l SV is found from 12 samples at 4AROA192.55 at 88 µg/l.

IMPAIRMENT SOURCE: NPS - Urban / Sewage Overflows, Unknown, Anthropogenic Influence

Recreational Use

The source is believed to be primarily from upstream urban nonpoint source contributions (VAW-L04R) and marginal agricultural activity in proximity of the upper reaches of Smith Mountain Lake.

Fish Consumption Use The exact source(s) of the PCB contamination is unknown.

Fish Consumption Use

The Virginia Department of Health (VDH) PCB action level is 600 ppb in fish tissue. The VDH Catfish Advisory is based on 2002 fish tissue collections.

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment. Other information on VDH fish consumption advisories, prohibitions or bans can be viewed at <http://www.vdh.state.va.us>

Aquatic Life Use

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification. Nutrient input from upstream nonpoint source and sewage overflows may be contributing to the impairment.

The total phosphorus source is believed to be primarily from upstream urban nonpoint source contributions, sewage overflows (VAW-L04R) and marginal agricultural activity in proximity of the upper reaches of Smith Mountain Lake.

Fact Sheets for Category 5 Waters

Informational Note: Smith Mountain Lake is designated by Virginia's Water Quality Standards as a Nutrient Enriched Water (9 VAC 25-260-350 A.1.; NEW-1). The Water Quality Management Planning (WQMP) Regulation also lists Smith Mountain Lake as water quality limited for phosphorus (9 VAC 25-720-80 B. Segment classification).

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: Smith Mountain Lake - Crazy Horse Camp Ground
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L12L-05
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 5.23 - Acres
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016
UPSTREAM LIMIT:

DESCRIPTION: Crazy Horse Camp Ground and Marina.

RIVER MILE:

LATITUDE: 37.06778

LONGITUDE: -79.64833

DOWNSTREAM LIMIT:

DESCRIPTION:

RIVER MILE:

LATITUDE:

LONGITUDE:

The segment begins and ends at the Crazy Horse Camp Ground Beach and Marina area.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Category 5A - Crazy Horse Camp Ground and Marina is located on an unnamed tributary to the Blackwater River. The VDH issued a beach closure at the facility for one week each in June and July 2000 noting a recurrence of bacterial contamination is likely. The facility is located off Route 601 at 37°04'04" / 79°38'54" on the Moneta SW Quad. This is a new 2004 Listing (VAW-L12LR-05).

IMPAIRMENT SOURCE: VDH Beach Closure

Recreational Use

The exact source is not known. Possible contributing sources include residential urban nonpoint source (to include on site treatment systems), marina pump out, agriculture and wildlife.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin, Pittsylvania
STREAM NAME: Smith Mountain Lake - Blackwater River, Bull Run,
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L12L-05N
ASSESSMENT CATEGORY: 5A/4A/4C
SEGMENT SIZE: 6195 - Acres
INITIAL LISTING: 1998
TMDL SCHEDULE: 2010
UPSTREAM LIMIT:

DESCRIPTION: Backwaters of Blackwater R. in SML (795 ft. pool elevation)

RIVER MILE: 18.22

LATITUDE: 37.06250

LONGITUDE: -79.76989

DOWNSTREAM LIMIT:

DESCRIPTION: Blackwater R. confluence on Roanoke R.

RIVER MILE: 0.00

LATITUDE: 37.04417

LONGITUDE: -79.66262

The segment begins at the Smith Mountain Lake backwaters of the Blackwater River and extend downstream 18.22 miles to the Blackwater River mouth on the Roanoke River. The 2004 segment now encompasses Bull Run and Cool Branch. The 2004 segment spans the Redwood, Moneta SW and Smith Mountain Dam Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Fish Consumption Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (1998) - 349 acres, Fish Tissue - PCBs (2002) - 2104 acres, Dissolved Oxygen (Bottom 2002)

Monitoring stations discussed below are all in Franklin County. Stations on the Blackwater River 4ABWR019.75 (Rt. 834 - Brooks Mill Bridge), 4ABWR017.42 (Buoy 50), 4ABWR010.92 (Buoy No. 11B - Old Buoy No.), 4ABWR010.55 (Buoy No. 23), 4ABWR002.50 (Near mouth of Blackwater River) and tributary stations 4ABSA000.62 (confluence of Little Bull Run) and 4ACOA000.60 (~0.6 miles upstream of Cool Branch mouth).

Recreational Use

The free flowing Lower Blackwater River fecal coliform bacteria Total Maximum Daily Load (TMDL) Study and allocation scenario is complete. The segment is therefore Category 4A for bacteria with the US Environmental Protection Agency (EPA) approval of the study and allocations on 04/27/2001. Additional bacteria TMDL studies and allocations on the Blackwater drainage are complete and US EPA approved. The entirety of the approved study and allocations can be viewed at <http://www.deq.state.va.us>.

The original 1998 segment extending from the Blackwater River headwaters into Smith Mountain Lake became listed based on a 319 funded special study (SS 925102) and ambient sample collections. Abundant fecal coliform bacteria counts failed to support the swimming use by exceedances of both the geometric mean (200 n/100 ml) and the former instantaneous criterion of 1000 cfu/100 ml.

Top layer: Fecal coliform bacteria cause 4.37 miles or 349 acres of the upper Blackwater River arm do not support the recreational use. Monitoring continues at station 4ABWR019.75 where ambient data show 15 of 59 samples exceed the current 400 cfu/100 ml instantaneous criterion. Downstream only one of 24 fecal coliform bacteria samples exceed at 4ABWR017.42-TL. No exceedances of the 235 cfu/100 ml Escherichia coli (E. coli) instantaneous criterion are found from three samples. The waters from the backwaters of the Blackwater River downstream to near the 4-H Camp (37°03'03.16" / 079°43'48.35") however remain impaired for the recreational use. These waters are categorized 4A with the US EPA approval of the Lower Blackwater Bacteria TMDL Study and allocations and additional bacterial TMDL studies in the drainage.

Fact Sheets for Category 5 Waters

Fish Consumption Use

Fish tissue collections from 1998 and 1999 produce results that require further collections to substantiate the degree of use support in this 13.18 mile or 2104 acre portion of the overall segment. The fish consumption portion of the overall segment extends from the backwaters of the Blackwater River downstream to the mouth of Gills Creek (37°02'49.06" / 079°39'56.69").

Fish tissue collections reveal the following results from two stations 4ABWR019.75 and 4ABWR010.92. 1998 fish collections at 4ABWR010.92 find polychlorinated biphenyls (PCBs) in excess of the human health-risk carcinogenic WQS screening value (SV) of 54 parts per billion (ppb) in tissue from three Stripped Bass. PCB values are 70.5, 70.2 and 99.0 ppb. 2002 fish tissue finds no excursions of PCBs from Largemouth Bass (11 ppb), Black Crappie (1 ppb) or Carp (14 ppb) from a total of 17 fish. 1999 collections at 4ABWR010.92 report no exceedances from Carp, Redhorse Sucker, Gizzard Shad, Bluegill or Largemouth Bass. The highest 1999 PCB concentration occurs in Carp tissue at 7.36 ppb. No Stripped Bass were captured during either sampling event.

Station 4ABWR019.75 There have been no new tissue collections at this site since the 2002 303(d) Listing. However data utilized for the 2002 listing are from 1993 tissue collections finding PCBs in excess of the WQS based TV for PCBs in a Redhorse Sucker at 68.5 and a Carp 68.2 ppb.

Based on these results the waters do not support the fish consumption use. There is no Virginia Department of Health (VDH) Advisory as tissue concentrations are below the VDH action level of 600 ppb. Information on the fish tissue sampling program can be viewed at <http://www.deq.state.va.us/water/>

Aquatic Life Use

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall at 4ABWR017.42-BL, 4ABWR010.55-BL and 4ABWR002.50-BL. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs.

A total of 29 dissolved oxygen measurements exceed the minimum criterion from 48 measurements at 4ABWR017.92. Station 4ABWR010.55-BL records 95 of 288 measurements below the minimum and 4ABWR002.50-BL records 142 of 446. The 2002 dissolved oxygen impairment remains.

The Carlson Trophic State Index (TSI) is used to determine the cause of the dissolved oxygen impairment eg. natural or anthropogenic in nature. The following are the index scores from three stations where CA = chlorophyll (a), TP = total phosphorus and SD = seechi disk (transparency).

Blackwater River (4659 acres or 18.22 miles)
4ABWR017.92-TL CA [53.66] TP [53.20] SD [62.77].
4ABWR010.55-TL CA [38.22] TP [38.51] SD [46.74].
4ABWR002.50-TL CA [35.23] TP [37.35] SD [43.20].

Bull Run (1186 acres or 5.80 miles)
4ABSA000.62-TL CA [37.66] TP [38.51] SD [44.57].

Cool Branch (350 acres or 1.83 miles)
4ACOA000.60-TL CA [35.10] TP [38.51] SD [42.84].

TSI scores below 60 indicate a natural aging process in the reservoir while above 60 indicates man's activities on the land may be influencing the natural aging of the reservoir. The data above, primarily SD, indicates the upper portion of the Blackwater, 349 acres or 4.37 miles, may be affected man's activities on the land and speeding up the natural process. The downstream Blackwater, Bull Run and Cool Branch portions of Smith Mountain Lake TSIs show a more natural aging process within the reservoir and are categorized 4C.

The upper portion of the Blackwater is categorized 4C based on the CA score being below 60 and the SD score slightly above the 60 TSI. The 62.77 score may reflect turbidity as well as biomass.

The lower portion of the Blackwater River is a 'Water of Concern' based on excursion of the Consensus Based Probable Effect Concentration (PEC) screening value (SV) [MacDonald et al., 2000]. Station 4ABWR002.50 records a 1998 maximum value of 54.64 parts per million (ppm) for nickel (Ni) in excess of the PEC SV of 48.6 ppm. The 5.04 mile or 2555 acre segment extends from the mouth of Gills Creek downstream to the Blackwater River confluence with the Roanoke River.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban / Wildlife, Unknown, Natural / Stratification

Recreational Use

The source of the impairment is a combination of agricultural, residential and wildlife contributions from upstream watersheds VAW-L08R, VAW-L09R and VAW-L10R.

Fish Consumption Use

The exact source(s) of the PCB contamination is unknown.

Fact Sheets for Category 5 Waters

The Virginia Department of Health (VDH) PCB action level is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment. Other information on VDH fish consumption advisories, prohibitions or bans can be viewed at <http://www.vdh.state.va.us>

Aquatic Life Use

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

Informational note: Smith Mountain Lake is designated by Virginia's Water Quality Standards as a Nutrient Enriched Water (9 VAC 25-260-350 A.1.; NEW-1). The Water Quality Management Planning (WQMP) Regulation also lists Smith Mountain Lake as water quality limited for phosphorus (9 VAC 25-720-80 B. Segment classification).

The exact source of the sediment nickel contamination is unknown.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford
STREAM NAME: Beaverdam Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L12L-06N
ASSESSMENT CATEGORY: 5C
SEGMENT SIZE: 185 - Acres
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Backwaters of Beaverdam Cr.
RIVER MILE: 2.80
LATITUDE: 37.21472 **LONGITUDE:** -79.74992

DOWNSTREAM LIMIT:

DESCRIPTION: Beaverdam Cr. mouth on Roanoke R.
RIVER MILE: 0.00
LATITUDE: 37.19222 **LONGITUDE:** -79.72771

The segment begins in the backwaters of Beaverdam Creek and extends 2.80 miles downstream to its confluence with the Roanoke River. The lake segment is on the Hardy and Goodview Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Dissolved Oxygen (Bottom)

Aquatic Life Use

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth.

No measurements at depth are available for Beaverdam Creek. However exceedances of the minimum criterion are believed to occur and are therefore listed. The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs. The 2002 dissolved oxygen 303(d) Listing remains and the segment categorized 5C.

IMPAIRMENT SOURCE: Natural / Stratification

Aquatic Life Use

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

Informational Note: Smith Mountain Lake is designated by Virginia's Water Quality Standards as a Nutrient Enriched Water (9 VAC 25-260-350 A.1.; NEW-1). The Water Quality Management Planning (WQMP) Regulation also lists Smith Mountain Lake as water quality limited for phosphorus (9 VAC 25-720-80 B. Segment classification).

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford, Campbell, Pittsylvania
STREAM NAME: Leesville Lake - Roanoke River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L13L-01N
ASSESSMENT CATEGORY: 5C/4C
SEGMENT SIZE: 2055 - Acres
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014
UPSTREAM LIMIT:

DESCRIPTION: Confluence of Pigg & Roanoke R.
RIVER MILE: 156.65
LATITUDE: 37.00556 **LONGITUDE:** -79.48118

DOWNSTREAM LIMIT:

DESCRIPTION: Leesville Dam
RIVER MILE: 143.85
LATITUDE: 37.09278 **LONGITUDE:** -79.40261

The upstream limit of the segment is at the confluence of the Pigg and Roanoke Rivers downstream 12.80 miles to Leesville Dam. The segment spans the Smith Mountain Dam and Leesville Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: pH - 407 acres / Dissolved Oxygen (Bottom) - 2055 acres

Aquatic Life Use

Top layer: The waters exceed the WQS pH criterion range of 6.0 - 9.0 Standard Units (SU) from the Old Womans Creek mouth downstream to Leesville Dam, a distance of 2.20 miles or 407 acres. Station 4AROA140.66-TL (Leesville Dam) records three of 18 pH measurements exceeding the alkaline criterion. Two of the exceeding values are 9.1 SU found in June and August of 1999. The remaining excursion 9.3 SU occurs in August 2000. The aquatic life use is not supported for 2.20 miles or 470 acres of the lower portion of Leesville Lake as a result- Category 5C.

The Carlson Trophic State Index (TSI) is used to determine the cause of the dissolved oxygen excursions eg. natural or anthropogenic in nature. The following are the index scores from two stations where CA = chlorophyll (a), TP = total phosphorus and SD = seechi disk (transparency).

4AROA140.66-TL CA [44.73] TP [41.14] SD [48.86].
4AROA145.34-TL CA [46.86] TP [41.50] SD [50.28]

TSI scores below 60 indicate a natural aging process in the reservoir while above 60 indicates man's activities on the land may be influencing the natural reservoir aging process. All scores are fully supporting indicating the natural aging of the reservoir.

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters at stations 4AROA140.66 and 4AROA145.34. Exceedances occur in the late spring, summer and early fall.

Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. Station 4AROA145.34-BL (Ramp near Bed/Cam Co. line) records 14 of 85

Fact Sheets for Category 5 Waters

measurements below the minimum criterion and 4AROA140.66-BL records 63 of 132. The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs. The cause of the 2002 dissolved oxygen 303(d) Listing is now assessed based on the Carlson Trophic Index noted above. All TSI scores are below 60 indicating a natural reservoir aging process (Category 4C).

IMPAIRMENT SOURCE: Unknown, Natural / Stratification

Aquatic Life Use

The exact source of the pH alkaline exceedance is not known but is believed due to natural conditions created in reservoirs.

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Pittsylvania
STREAM NAME: Leesville Lake - Pigg River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L13L-02
ASSESSMENT CATEGORY: 5A/4C
SEGMENT SIZE: 154 - Acres
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2010

UPSTREAM LIMIT:

DESCRIPTION: Backwaters of Leesville Lake on the Pigg R.
RIVER MILE: 3.06
LATITUDE: 36.98861 **LONGITUDE:** -79.51589

DOWNSTREAM LIMIT:

DESCRIPTION: Confluence of Pigg and Roanoke R.
RIVER MILE: 0.00
LATITUDE: 37.00528 **LONGITUDE:** -79.48122

The segment extends from the backwaters of Leesville Lake on the Pigg River downstream to the Pigg River confluence with the Roanoke River. The segment spans the Sandy Level, Pittsville and Leesville Lake Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria, Dissolved Oxygen (Bottom- 2002)

Recreational Use

Fecal coliform bacteria cause the segment to not support the recreational use. The segment incorporates station 4APGG003.29 (Rt. 605 Bridge). Four of 18 samples exceed the 400 cfu/100 ml instantaneous criterion. The range of exceeding values is from 500 cfu/100 ml to greater than 8000- Category 5A.

Aquatic Life Use

Station 4APGG003.29 located in the immediate backwaters of Leesville Lake reports a Carlson Trophic Index (TSI) score of 65.82 for total phosphorus. Station 4AROA153.59, located downstream of the Pigg River confluence in the reservoir, reports TSI scores of chlorophyll (a) (CA) [44.26], TP [47.35] and sechi disk (SD) [59.30]. The SD reading is indicative of turbidity as well as algal biomass. No reservoir bottom layer data (below the thermocline) are reported. However the parameter of preference in this situation is chlorophyll (a) with a TSI score of 44.26, well below the 60 TSI. Therefore the segment is Categorized 4C as per guidance.

Only one excursion of the free flowing total phosphorus screening value (SV) of 0.20 mg/l is found in the data at 4APGG003.29. Compared to the reservoir total phosphorus (TP) SV of 0.05 mg/l six of 18 samples exceed. Resulting in an 'Observed Effect' for the reservoir and a 'Water of Concern' for continued monitoring.

IMPAIRMENT SOURCE: NPS - Agriculture/Wildlife, Natural / Stratification

Recreational Use

The believed source of fecal coliform bacteria is primarily agricultural nonpoint source runoff. Wildlife contributions are possible in this mostly rural watershed.

Aquatic Life Use

Fact Sheets for Category 5 Waters

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Pittsylvania
STREAM NAME: Old Womans Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L13R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 4.86 - Miles
INITIAL LISTING: 1998
TMDL SCHEDULE: 2010
UPSTREAM LIMIT:

DESCRIPTION: Headwaters-end of perennial section

RIVER MILE: 8.43

LATITUDE: 36.97417

LONGITUDE: -79.39528

DOWNSTREAM LIMIT:

DESCRIPTION: Old Womans Cr. mouth on Roanoke R.

RIVER MILE: 3.57

LATITUDE: 37.06194

LONGITUDE: -79.40472

The upstream limit of this segment is the creek's headwaters. The downstream limit is at the inundation of Old Woman's Creek at Leesville Lake.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The 1999 Federal Consent Decree includes 4AOWC005.36 as a 1998 Attachment B station. The station is 2002 303(d) Listed as exceedances of the former WQS 1000 cfu/100 ml criterion are 13.6%; three of 22 exceedances.

Station 4AOWC005.36 is located on the Rt. 760 Bridge in Pittsylvania County. The recreational use is not supported due to exceedance of the current 400 cfu/100 ml instantaneous criterion. Fecal coliform bacteria exceedances are found in three of 17 samples. Exceeding values range from 800 to 6000 cfu/100 ml.

IMPAIRMENT SOURCE: NPS - Agriculture/Wildlife

Recreational Use

The source of fecal coliform bacteria is believed to be a possible mix of agricultural and wildlife nonpoint source runoff.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: Pigg River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L14R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 35.06 - Miles
INITIAL LISTING: 1996
TMDL SCHEDULE: 2006

UPSTREAM LIMIT:

DESCRIPTION: South Prong Pigg R. mouth on the Pigg R.
RIVER MILE: 77.95
LATITUDE: 36.97153
LONGITUDE: -80.04379

DOWNSTREAM LIMIT:

DESCRIPTION: ~ Ten miles downstream of Rocky Mt. STP.
RIVER MILE: 42.89
LATITUDE: 36.98250
LONGITUDE: -79.78292

The segment begins at the mouth of the South Prong Pigg River on the Pigg River extending downstream of the Rocky Mount STP to an unnamed tributary to the Pigg River upstream of the community of Gladehill. The segment spans the Rocky Mount and Gladehill Quads.

Note: The 2002 listed segment is extended upstream in 2004 to the mouth of the South Prong Pigg River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The segment is extended upstream from the confluence of Storey Creek on the Pigg River continuing on upstream to the mouth of the South Prong Pigg River. A total of 35.06 miles are impaired with the 2004 addition of 13.38 miles to the 2002 impaired miles (21.68). The extension of the segment is based on additional data described below.

Three stations along the Pigg River find the recreational use impaired due to exceedance of the 400 cfu/100 ml instantaneous criterion. Station locations are: 4APGG074.87 - Rt. 908 Ford, 4APGG068.49 - Rt. 756 Bridge and 4APGG052.73 - Rt. 713 Bridge.

Four of nine fecal coliform bacteria samples exceed at Station 4APGG074.87. Exceedance values range from 600 cfu/100 ml to greater than 8000. Station 4APGG068.49 reports three of nine exceedances ranging from 600 to 2000 cfu/100 ml. The recreational use is not supported. Fecal coliform bacteria cause impairment at station 4APGG052.73 as well where 15 of 57 samples exceed the instantaneous criterion. Fecal coliform exceedances range from 700 cfu/100 ml to greater than 8000.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban / Wildlife

Recreational Use

Contributing sources are believed to be from agricultural activities, wildlife and episodic urban nonpoint events.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: Storey Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L14R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 11.6 - Miles
INITIAL LISTING: 1996
TMDL SCHEDULE: 2010

UPSTREAM LIMIT:

DESCRIPTION: Intersection of Rt. 40 & Rt. 748
RIVER MILE: 11.60
LATITUDE: 36.93000
LONGITUDE: -80.03851

DOWNSTREAM LIMIT:

DESCRIPTION: Storey Cr. mouth on the Pigg River
RIVER MILE: 0.00
LATITUDE: 36.96361
LONGITUDE: -79.90908

The upper limit is west of Ferrum near the intersection of Rt. 40 and Rt. 748, perennial headwaters (Ferrum Quad). The downstream limit is the mouth of Storey Creek on the Pigg River (Rocky Mount Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The segment does not support the recreational use. Nonsupport is due to fecal coliform bacteria exceedances of the 400 cfu/100 ml criterion at two stations 4ASDA009.79 (Rt. 623 above Ferrum STP), 4ASDA009.77 (off Rt. 864 below Ferrum STP). 4ASDA009.79 reports 13 exceedances from 24 observations and 4ASDA009.77 records 13 out of 37. Both stations range of exceedance is from 500 cfu/100 ml to greater than 8000. A third station 4ASDA007.24 (Rt. 40 Bridge near Ferrum) records one exceedance from eight observations at 4700 cfu/ 100 ml. These data are insufficient to assess [Assessment Guidance 2004].

Aquatic Life Use

A 9.61 mile 'Water of Concern' extends from the Ferrum Water & Sewerage Authority outfall (36°55'36.24 / 080°00'35.56) downstream to the Storey Creek mouth on the Pigg River. Total phosphorus screening value exceedances result in an 'Observed Effect' in these waters.

Upstream station 4ASDA009.79 found no total phosphorus exceedances from 25 samples. Station 4ASDA009.77 records 16 exceedances of the 0.20 mg/l total phosphorus screening value from 38 samples. Maxima range in values from 0.30 to 4.30 mg/l (November 1998). 4ASDA009.77 is located downstream of the Ferrum Water & Sewerage Authority's outfall on Storey Creek. An additional downstream station 4ASDA007.24 also finds TP SV exceedances. The SV range of exceedance is from 0.25 mg/l to 0.35 in five of nine samples.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban / Wildlife

Recreational Use

The source is believed to be a mix of agricultural, wildlife and urban nonpoint source runoff around the Ferrum area. Infiltration/Inflow problems have been noted in the Ferrum area. A Consent Order requires the Ferrum Water & Sewerage Authority to correct these problems.

Fact Sheets for Category 5 Waters

Aquatic Life Use

The source of the total phosphorus is believed from the Ferrum Water & Sewerage Authority's STP on Storey Creek.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin
STREAM NAME: Big Chestnut Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L15R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 12.88 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016
UPSTREAM LIMIT:

DESCRIPTION: Little Chestnut Cr. confluence with Big Chestnut Cr.

RIVER MILE: 12.88

LATITUDE: 36.89528

LONGITUDE: -79.82917

DOWNSTREAM LIMIT:

DESCRIPTION: Big Chestnut Cr. mouth on the Pigg R.

RIVER MILE: 0.00

LATITUDE: 36.93083

LONGITUDE: -79.73730

Big Chestnut Creek from the confluence of Little Chestnut Creek downstream to its confluence with the Pigg River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4ACNT001.32, located on the Rt. 715 Bridge, finds fecal coliform bacteria exceed the 400 cfu/100 ml instantaneous criterion in two of 17 samples. The exceedances are 600 and 2300 cfu/100 ml. The recreational use is not supported.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife

Recreational Use

Agricultural activities and wildlife are believed to be the major contributing sources for the bacteria impairment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin, Pittsylvania
STREAM NAME: Snow Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L17R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 10.98 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2010

UPSTREAM LIMIT:

DESCRIPTION: Snow Br./Ditto Br. Confluence.
RIVER MILE: 10.98
LATITUDE: 36.87722 **LONGITUDE:** -79.68745

DOWNSTREAM LIMIT:

DESCRIPTION: Snow Cr. mouth on Pigg R.
RIVER MILE: 0.00
LATITUDE: 36.92917 **LONGITUDE:** -79.60123

The upstream limit of this segment is the Ditto Branch confluence on Snow Creek. The segment end is at the mouth of Snow Creek on the Pigg River. The segment spans the Penhook and Sandy Level Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The 1999 Federal Consent Decree includes 4ASNW000.60 as a 1998 Attachment B station. Fecal coliform bacteria are 303(d) listed in 2002 and again in 2004. The 2002 assessment reports five of 22 samples in excess of the former 1000 cfu/100 ml instantaneous criterion. An exceedance rate of 22 percent.

The 2004 assessment finds three of 17 samples exceed the current 400 cfu/100 ml instantaneous criterion at station 4ASNW000.60, Kirby Ford Bridge. The exceedance range is from 1500 cfu/100 ml to greater than 8000.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife

Recreational Use

The source(s) of fecal coliform bacteria is believed to be from agricultural activities and wildlife.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Franklin, Pittsylvania
STREAM NAME: Pigg River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L18R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 28.92 - Miles
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2006

UPSTREAM LIMIT:

DESCRIPTION: Big Chestnut Cr. mouth on the Pigg R.
RIVER MILE: 32.99
LATITUDE: 36.93083 **LONGITUDE:** -79.73730

DOWNSTREAM LIMIT:

DESCRIPTION: Backwaters of Leesville Lake
RIVER MILE: 4.07
LATITUDE: 36.98861 **LONGITUDE:** -79.51589

The segment extends from the mouth of Big Chestnut Creek on the Pigg River (RM 32.99) downstream to the backwaters of Leesville Lake (RM 4.07). The segment spans the Penhook and Sandy Level Quads.

Note: This segment now incorporates the former TMDL ID of VAW-L16R-01 (15.54 miles) initially listed in 2002.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Fecal coliform bacteria cause the segment to not support the recreational use based on data from two stations along the Pigg River. Station 4APGG030.62 (Rt. 646, Fralin Bridge) found seven of 27 samples exceeding the 400 cfu/100 ml instantaneous criterion in 2002 and again in 2004. And downstream station 4APGG003.29 (Rt. 605 Bridge) finds four of 18 samples exceed the instantaneous criterion. Exceedance at this station has occurred since 1998. Each station reports exceeding values ranging from 500 cfu/100 ml to greater than 8000.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife

Recreational Use

The believed source(s) of fecal coliform bacteria is primarily agricultural nonpoint source runoff and wildlife contributions from this mostly rural watershed.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford
STREAM NAME: Goose Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L20R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 6.79 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Confluence of North and South Forks of Goose Cr.
RIVER MILE: 41.82
LATITUDE: 37.37005 **LONGITUDE:** -79.69999

DOWNSTREAM LIMIT:

DESCRIPTION: Bore Auger Cr. mouth on Goose Cr.
RIVER MILE: 35.03
LATITUDE: 37.30898 **LONGITUDE:** -79.66283

The segment begins at the confluence of the North and South Forks of Goose Creek extending downstream to the mouth of Bore Auger Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Located on the Rt. 755 Bridge station 4AGSE037.78 finds fecal coliform bacteria exceeds in three of 18 analyses. Each exceedance, 500, 700 and 4800 cfu/100 ml, is in excess of the 400 cfu/100 ml instantaneous criterion. The recreational use is not supported.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban / Wildlife

Recreational Use

Possible sources of the fecal coliform bacteria are urban and agricultural nonpoint source runoff as well as wildlife.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford
STREAM NAME: Goose Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L21R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 7.28 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Rocky Br. mouth on Goose Cr.
RIVER MILE: 27.07
LATITUDE: 37.27170 **LONGITUDE:** -79.60415

DOWNSTREAM LIMIT:

DESCRIPTION: Stony Fork Cr. confluence on Goose Cr.
RIVER MILE: 19.79
LATITUDE: 37.20419 **LONGITUDE:** -79.57901

Goose Creek from the mouth of Rocky Branch downstream to the confluence of Stony Fork Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The 1999 Federal Consent Decree includes 4AGSE022.55 as a 1998 Attachment B station for fecal coliform bacteria. The station is not 2002 303(d) listed as the 2002 exceedance rate is 8 percent where two of 23 analyses exceed the former 1000 cfu/100 ml instantaneous criterion. The 2004 fecal coliform bacteria assessment finds nonsupport as described below.

The segment brackets station 4AGSE022.55 at the Rt. 24 Bridge. Fecal coliform bacteria are found in excess of the current instantaneous criterion of 400 cfu/100 ml in two of 18 observations. Each exceedance is 800 and 3100 cfu/100 ml.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife

Recreational Use

Contributing sources are believed to be from agricultural activities and wildlife.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford, Campbell, Pittsylvania
STREAM NAME: Goose Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L22R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 10.04 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Crab Orchard Cr. mouth on Goose Cr.
RIVER MILE: 10.04
LATITUDE: 37.16167 **LONGITUDE:** -79.48052

DOWNSTREAM LIMIT:

DESCRIPTION: Goose Cr. mouth on Roanoke (Staunton) R.
RIVER MILE: 0.00
LATITUDE: 37.11694 **LONGITUDE:** -79.38384

The upstream limit of this segment is at the Rt. 626 bridge crossing Crab Orchard Creek. The downstream limit is Goose Creek's mouth on the Roanoke River. The segment spans the Huddleston and Leesville Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

The segment does not support the recreational use. Exceedances of the fecal coliform bacteria criterion are found at station 4AGSE000.20 where three of 18 observations exceed the 400 cfu/100 ml instantaneous criterion. Values in excess of the criterion are 1100, 2700 and 6700 cfu/100 ml. The station is located at the Rt. 630 Bridge in Campbell County.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife

Recreational Use

The source of fecal coliform bacteria is believed to be agricultural nonpoint source runoff. Wildlife contributions are possible in this mostly rural watershed.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford
STREAM NAME: Little Otter River
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L26R-01
ASSESSMENT CATEGORY: 5D
SEGMENT SIZE: 27.03 - Miles
INITIAL LISTING: 2002
TMDL SCHEDULE: 2014
UPSTREAM LIMIT:

DESCRIPTION: Rt. 680 Cobbs Mountain
RIVER MILE: 27.03
LATITUDE: 37.37583
LONGITUDE: -79.60824

DOWNSTREAM LIMIT:

DESCRIPTION: Little Otter R. mouth on the Big Otter R.
RIVER MILE: 0.00
LATITUDE: 37.27444
LONGITUDE: -79.40525

The upper limit is west of Rt. 680 at Cobbs Mountain on the Peaks of Otter Quad. The downstream limit is the mouth of the Little Otter River on the Big Otter River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Fish Consumption Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (1996) - 27.03 mi., Fish Tissue - PCBs (2002) - 14.36 mi., General Standard (Benthic 2002) - 5.72 mi.

Recreational Use

The Little Otter River Bacteria Total Maximum Daily Load (TMDL) Study and allocations is complete. The segment is therefore Category 4A for bacteria with the US Environmental Protection Agency (EPA) approval of the study on 02/02/2001. The entirety of the approved study and allocations can be viewed at <http://www.deq.state.va.us>.

The 1996/1998/2002 303(d) Listing basis for fecal coliform bacteria are ambient collections showing contravention of the former 1000 cfu/100 ml fecal coliform criterion in greater than 10 and 25 percent of the samples collected. The segment, although delisted with the US EPA TMDL Study approval (Category 4A), remains impaired for the recreational use for 27.03 miles. 2004 Assessment results are described below.

The total impaired segment includes stations 4ALOR021.92 (Rt. 838 Bridge), 4ALOR018.96 (Rt. 122 Bridge north of the intersection of Routes 122 and 211), 4ALOR014.75 (Rt. 718 Bridge above Bedford STP), 4ALOR010.78 (Rt. 460 Bridge- ambient sampling discontinued in June 1996) and 4ALOR008.64 (Rt. 784 Bridge).

Fecal coliform bacteria cause nonsupport of the recreational use for 12.67 miles in the upper portions of the segment extending from the headwaters downstream to the Bedford STP outfall. Two fecal coliform bacteria collections at 4ALOR021.92 both exceed the current 400 cfu/100 ml instantaneous criterion. Each exceeding value is 3300 cfu/100 ml and greater than 160,000. Station 4ALOR018.96 records two exceedances from two samples. Each exceedance is 4900 cfu/100 ml and greater than 160,000. Sixteen of 60 samples exceed the instantaneous criterion at 4ALOR014.75 with an excursion range from 450 cfu/100 ml to greater than 8000.

Fecal coliform bacteria cause nonsupport in the lower portion of the Little Otter for 14.36 miles. Downstream of the Bedford STP station 4ALOR014.33 records two of two samples exceeding the instantaneous criterion with values ranging from 1100 to greater than 160,000 cfu/100 ml. Station 4ALOR10.78 records two exceedances from two samples at 1700 cfu/100 ml and greater than 160,000. Station

Fact Sheets for Category 5 Waters

4ALOR008.64 reports 23 of 52 samples exceeding the 400 cfu/100 ml instantaneous criterion. Exceeding values range from 500 to 28,000 cfu/100 ml.

Fish Consumption Use

Fish tissue collections at 4ALOR007.94 find polychlorinated biphenyls (PCBs) in excess of the human health-risk carcinogenic WQS tissue value (TV) of 54 parts per billion (ppb) from two species; Carp 68.30 and Smallmouth Bass 54.8 ppb. Other sampled species record PCBs in Redhorse Sucker 28.50 and Redbreast Sunfish 8.21 ppb both below the WQS TV. The waters do not support the fish consumption use for 14.36 miles from the Bedford STP (37°19'47" / 079°27'50") downstream to the Little Otter confluence with the Big Otter River. The fish consumption use impairment is a 2002 addition to the 303(d) Listing and remains in the 2004 Listing. No Virginia Department of Health fish consumption advisory is issued for this segment.

Aquatic Life Use

Station 4ALOR014.33 finds moderate impacts to the biota below the Bedford STP and Johns Creek confluence with the Little Otter River. The waters are impaired for 5.72 miles. The segment begins at the Bedford STP outfall (excluding the mixing zone) and extends downstream to the mouth of Poorhouse Creek (37°17'51" / 079°27'21"). The aquatic life use General Standard (Benthic) impairment is a 2002 addition to the 303(d) Listing.

The downstream portion of the Little Otter River is a 'Water of Concern' for 14.36 miles due to exceedance of the 0.20 mg/l total phosphorus screening value (SV). The segment brackets station 4ALOR008.64. Total phosphorus exceedances at station 4ALOR008.64 finds 29 of 56 samples exceed the SV. The maxima range from 0.3 to 1.50 mg/l resulting in an 'Observed Effect'. The 'Water of Concern' extends from the Bedford STP outfall (excluding the mixing zone) downstream to the Little Otter confluence with the Big Otter River.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban, NPS - Agriculture / Urban, NPS - Agriculture / Urban

Recreational Use

The TMDL Study lists impairment sources as pasture land and direct deposition from cattle as the primary contributors. Wildlife is also noted as a secondary contributor.

Fish Consumption Use

The exact sources of the PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

Aquatic Life Use

The General Standard (Benthic) impairment is believed due to urban storm runoff and sewage overflows along Johns Creek.

Total phosphorus exceedances are believed due to point source as well as nonpoint source urban runoff.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Bedford, Bedford City
STREAM NAME: Johns Creek
HYDROLOGIC UNIT: 03010101
TMDL ID: VAW-L26R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 2.13 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Near headwaters in Bedford City.
RIVER MILE: 2.13
LATITUDE: 37.33889 **LONGITUDE:** -79.49389

DOWNSTREAM LIMIT:

DESCRIPTION: Johns Creek mouth on the Little Otter R.
RIVER MILE: 0.00
LATITUDE: 37.32833 **LONGITUDE:** -79.46364

The segment begins near the headwaters of Johns Creek and extends downstream to its confluence with the Little Otter River. The segment spans the Bedford and Goode Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: General Standard (Benthic)

Aquatic Life Use

The segment brackets biological station 4AJHN000.01, near the Johns Creek confluence with the Little Otter River. The original 2002 Benthic results show moderate impact to the benthic community from a total of three Rapid Bioassessment Protocol II (RBP II) surveys. The 2004 assessment also reports moderate impairment from two spring RBP II surveys; RBP II scores of 73.68 in 1999 and 35.00 in 2000. Despite the spring 1999 higher score the survey found the total number of taxa and total individuals were low with pollution tolerant taxa dominant. The segment remains impaired for the General Standard benthic impairment.

IMPAIRMENT SOURCE: NPS - Urban

Aquatic Life Use

The impairment source is believed to be primarily urban nonpoint source pollution. The impairment source is urban pump station overflows and with possible agriculture nonpoint source runoff.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Patrick
STREAM NAME: Dan River
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L42R-01N
ASSESSMENT CATEGORY: 5C
SEGMENT SIZE: 9.81 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Squirrel Cr. mouth on the Dan River
RIVER MILE: 178.18
LATITUDE: 36.61528 **LONGITUDE:** -80.45149

DOWNSTREAM LIMIT:

DESCRIPTION: VA-NC State line - after return from NC
RIVER MILE: 168.37
LATITUDE: 36.54944 **LONGITUDE:** -80.42193

The segment extends from the VA-NC State Line upstream to the Squirrel Creek mouth on the Dan River off Route 631 in Patrick County. The entire segment is on the Claudville Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Temperature

Aquatic Life Use

The basis for the original 2002 temperature Listing is due to exceedance of the 21°C temperature criterion for this stockable trout water (WQS Class V) in three of 19 measurements at station 4ADAN169.57. The exceedances are 21.5 °C (1996), 21.2 °C (1997) and 23.6 °C (1998), all occurring in the month of July. The last sample taken is May 2000. The 2004 assessment finds one of 11 measurements exceeding the temperature criterion. The segment therefore remains impaired for temperature (Category 5C) and thus does not support the aquatic life use. The station is located north of the VA-NC State line on the Rt. 645 Bridge.

IMPAIRMENT SOURCE: Unknown

Aquatic Life Use

The impairment is believed to result from solar radiation as there are no known sources of heat in the area.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Patrick
STREAM NAME: South Mayo River
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L43R-01
ASSESSMENT CATEGORY: 5D
SEGMENT SIZE: 25.79 - Miles
INITIAL LISTING: 1998
TMDL SCHEDULE: 2016

UPSTREAM LIMIT:

DESCRIPTION: ~0.3 miles upstream of Wilson Cr. mouth on South Mayo R.

RIVER MILE: 38.21

LATITUDE: 36.63956

LONGITUDE: -80.34245

DOWNSTREAM LIMIT:

DESCRIPTION: Spoon Cr. mouth on South Mayo R.

RIVER MILE: 12.42

LATITUDE: 36.56778

LONGITUDE: -80.10586

The upper limit is 0.3 miles upstream of the Wilson Creek mouth (near Dobyns) on the South Mayo River and extends downstream to the confluence of Spoon Creek on the South Mayo River.

Note: The 5.77 mile 1998 segment is expanded by 20.02 miles in 2004 as the result of additional data collection.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria, Temperature (2004) - 4.46 mi.

Recreational Use

The South Mayo River Bacteria TMDL Flow Duration Study with load allocations is complete. U.S. EPA approved the study on 02/27/2004 (would be Category 4A for Bacteria). The TMDL Study and allocations can be viewed at <http://www.deq.state.va.us>. Additional data collection causes the original 5.77 mile segment to be expanded 20.02 miles.

The original 5.77 mile 1998 fecal coliform bacteria impairment began at the mouth of Russell Creek extending downstream to the mouth of Spoon Creek on the South Mayo River. The 1998 impairment is based on fecal coliform bacteria data producing a greater than 10 percent exceedance rate of the former 1000 cfu/100 ml instantaneous criterion at station 4ASMR016.09 (Rt. 700 Bridge at the USGS gaging station). Additional data collection and the current 400 cfu/100 ml instantaneous criterion causes the 2004 expansion upstream from two stations 4ASMR033.98 (Rt. 787 Bridge West of Stuart) and 4ASMR027.44 (Rt. 681 Bridge South of Stuart). 2004 Assessment results of these data are presented below.

Station 4ASMR033.98 is a 1999 Federal Consent Decree Attachment B station for fecal coliform bacteria. The station is not 2002 listed as there are no exceedances of the former 1000 cfu/100 ml criterion from 19 samples in 2002.

Station 4ASMR033.98 finds fecal coliform bacteria exceedance of the 400 cfu/100 ml instantaneous criterion in five of 20 samples. Exceeding values range from 500 to 1200 cfu/100 ml. This station was fully supporting of the former criterion in the 2002 assessment.

Two of nine fecal coliform bacteria samples exceed the 400 cfu/100 ml instantaneous criterion with values of 1400 and 1700 cfu/100 ml at station 4ASMR027.44. And the original 1998 impaired listing station 4ASMR016.09 records exceedances in five of 26 samples. The exceeding values range from 500 cfu/100 ml to greater than 16,000.

Fact Sheets for Category 5 Waters

Aquatic Life Use

The 2004 Assessment records temperature excursions of the Class VI, natural trout water criterion of 20°C. Station 4ASMR033.98 finds two of 19 temperature measurements exceeding the criterion- Category 5C. Each exceedance is 22°C occurring on 07/20/1998 and 08/28/2001.

The temperature impairment is a 2004 addition to the South Mayo River mainstem extending from upstream of the Wilson Creek mouth (36°38'22" / 80°20'33"), river mile 38.21, downstream to the end of the WQS natural trout section located just upstream of the Town of Stuart water intake (36°38'19" / 80°17'26") at river mile 33.75. The entire 4.46 mile impairment is on the Stuart Quad.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban / Wildlife, Unknown

Recreational Use

Urban, Agricultural and wildlife nonpoint sources are believed to be the primary contributing sources to the impairment.

Aquatic Life Use

Source unknown. There are no known sources of heat other than solar radiation to contribute to the temperature impairment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Patrick
STREAM NAME: Spoon Creek
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L44R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 7.64 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Unnamed tributary to Spoon Cr. (southeast of Patrick Springs (36° 37' 02" / 80° 09' 45").

RIVER MILE: 7.64

LATITUDE: 36.61718

LONGITUDE: -80.16239

DOWNSTREAM LIMIT:

DESCRIPTION: Spoon Cr. mouth on South Mayo R.

RIVER MILE: 0.00

LATITUDE: 36.56778

LONGITUDE: -80.10586

Spoon Creek mainstem from an unnamed tributary to Spoon Creek (southeast of Patrick Springs @ 36° 37' 02" / 80° 09' 45") downstream to its confluence with the South Mayo River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4ASOO003.12 (Route 832 Bridge) records three of 16 fecal coliform bacteria samples in excess of the 400 cfu/100 ml instantaneous criterion. Exceeding values range from 500 to 700 cfu/100 ml.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife

Recreational Use

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Henry, Patrick
STREAM NAME: South Mayo River
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L45R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 10.86 - Miles
INITIAL LISTING: 2004
TMDL SCHEDULE: 2016
UPSTREAM LIMIT:

DESCRIPTION: Spoon Cr. mouth on South Mayo R.

RIVER MILE: 11.17

LATITUDE: 36.56778

LONGITUDE: -80.10586

DOWNSTREAM LIMIT:

DESCRIPTION: South Mayo River at VA/NC State Line.

RIVER MILE: 0.31

LATITUDE: 36.54227

LONGITUDE: -79.99253

South Mayo River mainstem from the mouth of Spoon Creek downstream to the Virginia / North Carolina State Line. The segment spans the Spencer and Price Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Two of 16 fecal coliform bacteria samples exceed the 400 cfu/100 ml instantaneous criterion at station 4ASMR004.14. Exceeding values range from 500 to 6800 cfu/100 ml. Station 4ASMR004.14 is located on the Route 695 Bridge.

Fish Consumption Use

These waters are a 'Water of Concern' due to the exceedance of the 15 parts per billion (ppb) WQS tissue value for the Polyaromatic Hydrocarbon Benzo(a) pyrene [Guidance Table 6(a)]. The exceedance is found in one species, Redbreast Sunfish at 78 ppb and results in an 'Observed Effect' for the segment.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife

Recreational Use

The exact source(s) of the fecal coliform bacteria exceedance is not known but is believed to be a result of nonpoint source runoff from agriculture and/or wildlife.

Fish Consumption

The exact source(s) of Benzo(a) pyrene are not known.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Henry, Patrick
STREAM NAME: North Mayo River
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L46R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 22.46 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Confluence of Laurel Br. and Polebridge Cr.
RIVER MILE: 22.63
LATITUDE: 36.68933 **LONGITUDE:** -80.11552

DOWNSTREAM LIMIT:

DESCRIPTION: VA/NC State Line.
RIVER MILE: 0.17
LATITUDE: 36.54228 **LONGITUDE:** -79.98794

The segment begins at the confluence of Laurel Branch and Polebridge Creek extending downstream to the Virginia / North Carolina State Line.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4ANMR002.60 is a 1999 Federal Consent Decree Attachment B station for fecal coliform bacteria. The station is not 303(d) Listed in 2002 as only one exceedance of the former 1000 cfu/100 ml instantaneous criterion is found from 21 samples. The 2002 exceedance rate is 5 percent.

Two stations 4ANMR020.13 located on the Route 626 Bridge and 4ANMR002.60 both find excursions of the current 400 cfu/100 ml instantaneous criterion for fecal coliform bacteria. 4ANMR020.13 reports three of nine samples exceeding the criterion at 500, 600 and 1000 cfu/100 ml. 4ANMR002.60 finds three exceedances from 25 samples at 500, 600 and 1100 cfu/100 ml. The waters do not support the recreational use.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife

Recreational Use

The exact source(s) of the fecal coliform bacteria exceedance is not known but is believed to be a result of nonpoint source runoff from agriculture and/or wildlife.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Henry
STREAM NAME: Horse Pasture Creek
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L47R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 7.27 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Confluence of an unnamed tributary East of Route 696 (36°39'38" / 80°00'55").

RIVER MILE: 7.27

LATITUDE: 36.66058

LONGITUDE: -80.01534

DOWNSTREAM LIMIT:

DESCRIPTION: Horse Pasture Cr. confluence with North Mayo R.

RIVER MILE: 0.00

LATITUDE: 36.57875

LONGITUDE: -79.99038

The upper limit of the segment is at the confluence of an unnamed tributary East of Route 696 (36°39'38" / 80°00'55") downstream to the mouth of Horse Pasture Creek on the North Mayo River. The segment spans the Spencer and Price Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4AHRN004.93 reports five of 17 fecal coliform bacteria samples exceeding the 400 cfu/100 ml instantaneous criterion. The range of exceedance is from 600 to 2000 cfu/100 ml. Station 4AHRN004.93 is located on the Route 695 Bridge.

IMPAIRMENT SOURCE: NPS - Agriculture / Wildlife

Recreational Use

The exact source(s) of the fecal coliform bacteria exceedance is not known but is believed to be a result of nonpoint source runoff from agriculture and/or wildlife.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Patrick
STREAM NAME: Smith River
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L50R-01
ASSESSMENT CATEGORY: 5A/5C
SEGMENT SIZE: 9.2 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Rich Run mouth on the Smith R.
RIVER MILE: 79.20
LATITUDE: 36.74083 **LONGITUDE:** -80.29633

DOWNSTREAM LIMIT:

DESCRIPTION: Widgeon Creek mouth on the Smith R.
RIVER MILE: 70.00
LATITUDE: 36.80083 **LONGITUDE:** -80.21704

The segment begins at the mouth of Rich Run on the Smith River and extends downstream to the mouth of Widgeon Creek on the Smith River. The segment spans the Woolwine and Charity Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (2004), Temperature (2002)

Recreational Use

The recreational use is not supported based on fecal coliform bacteria results from station 4ASRE075.69. Four of 28 observations exceed the 400 cfu/100 ml instantaneous criterion. Excursions range from 600 to 900 cfu/100 ml. The station is located on the Route 708 Bridge in Patrick County. The bacteria impairment is a 2004 addition to the segment (Category 5A).

Aquatic Life Use

Exceedance of the WQS Class VI 20°C temperature criterion for this natural trout water occurs in nine of 28 measurements at station 4ASRE075.69. The range of exceedance is from 21 to 24°C all occurring in the summer months. Excursions are found primarily during the 1999-2002 drought. The temperature impairment originally listed in 2002 is based on 4ASRE075.69 data where three of 20 measurements exceed the criterion (Category 5C).

Supplemental Information: US Geological Survey station 02071510 records two of eight exceedances of the 20°C criterion, although outside the 2004 assessment data window (1998-2002). The excursions are from July 18 (23°C) and August 15 (24°C) 1995. The station is located 1.19 miles upstream of any known potential source of heat at the Rt. 615 crossing.

IMPAIRMENT SOURCE: NPS - Wildlife / Residential, Unknown

Recreational Use

Confirmed sources of fecal coliform bacteria are not known. Nonpoint Source runoff / direct deposit from wildlife or some agricultural practices may be contributing to the impairment.

Aquatic Life Use

The exact source of the temperature exceedances is unknown. Temperature exceedances are believed to be due to solar radiation based

Fact Sheets for Category 5 Waters

on the rarity of excursions and the time of year in which they occur. Although outside the 2004 assessment data window (1998-2002) US Geological Survey station 02071510 data from July and August 1995 indicate a natural occurrence.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Floyd, Franklin
STREAM NAME: Rennet Bag Creek
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L51R-01N
ASSESSMENT CATEGORY: 5C
SEGMENT SIZE: 11.16 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Rennet Bag Creek headwaters.
RIVER MILE: 13.36
LATITUDE: 36.89278 **LONGITUDE:** -80.23759

DOWNSTREAM LIMIT:

DESCRIPTION: Rennet Bag Creek inundation at Philpott Reservoir.
RIVER MILE: 2.20
LATITUDE: 36.86750 **LONGITUDE:** -80.11663

Rennet Bag Creek from its headwaters downstream to its inundation at Philpott Reservoir. The segment spans the Endicott, Charity and Philpott Reservoir Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Temperature

Aquatic Life Use

Station 4ARBC005.44 records two exceedances from six temperature measurements (Category 5C). Temperature excursions of the WQS Class V (stockable trout) 21 °C and Class VI (natural trout) 20 °C criteria occur in the summer months of August 1999 at 26.4 °C and June 2000 at 23.3 °C. Station 4ARBC005.44 is located on Rt. 43 west of Endicott in the WQS 9.04 mile natural trout water section. Class V stockable trout waters are 2.12 miles.

IMPAIRMENT SOURCE: Unknown

Aquatic Life Use

A confirmed source for temperature exceedances is not known but is believed due to solar radiation based on the time of year in which they occur.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Henry, Patrick
STREAM NAME: Blackberry Creek
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L52R-02
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 14.82 - Miles
INITIAL LISTING: 2002
TMDL SCHEDULE: 2010
UPSTREAM LIMIT:

DESCRIPTION: Headwaters of Blackberry Cr.

RIVER MILE: 14.82

LATITUDE: 36.75694

LONGITUDE: -80.13710

DOWNSTREAM LIMIT:

DESCRIPTION: Blackberry Cr. mouth on Smith R.

RIVER MILE: 0.00

LATITUDE: 36.75028

LONGITUDE: -79.97854

This segment begins at the headwaters of Blackberry Creek (RM 13.63) and extends downstream to Blackberry Creek's mouth on the Smith River. The segment includes an unnamed tributary from the north. The mouth of the unnamed tributary is at 36° 44' 38" / 80° 03' 07". The segment spans the Charity, Sanville, Martinsville West and Bassett Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Exceedance of the former fecal coliform instantaneous criterion of 1000 cfu/100 ml instantaneous criterion and the geometric mean of 200 cfu/100 ml cause the segment to not support the recreational use in 2002. Ambient station 4ABRY000.05, a 1999 Federal Consent Decree station is 2002 listed with an exceedance rate of 15 percent from three of 20 samples. Exceedance of the current fecal coliform bacteria 400 cfu/100 ml instantaneous criterion and the geometric mean continue to show nonsupport. Escherichia coli (E. coli) exceed the 235 cfu/100 ml instantaneous criterion as well. No geometric means for E. coli are calculated as collections are monthly only.

Special monitoring of Blackberry Creek began in the fall of 1999 after complaints from local residents regarding sewer service in the Blackberry drainage. Listed below are the monitored sites showing instantaneous excursions / with total sample collections and geometric mean calculation exceedances / with total calculations for fecal coliform bacteria. Instantaneous E. coli exceedances follow. One ambient fixed site 4ABRY000.05 is included with the non-fixed sites below. Unnamed tributaries comprise 1.19 miles of the overall segment.

Fecal coliform bacteria results:

2000W0034C Blackberry Cr. at Rt. 57A Bridge - 10/27 instant; 2/2 geomean.
2000W0034E Blackberry Cr. American Legion Bridge - 14/26 instant; 2/2 geomean.
4ABRY000.05 Blackberry Cr. American Legion Bridge - 4/20 instant.
2000W0034F Blackberry Cr. above Rt. 698 Bridge - 13/27 instant; 2/2 geomean.
2000W0034G Blackberry Cr. at Rt. 676 Bridge - 8/26 instant; 1/2 geomean.
2000W0034H Blackberry Cr. at end of Rt. 677 - 6/26 instant; 0/2 geomean.
2000W0034I Blackberry Cr. at Rt. 832 Bridge - 12/27 instant; 2/2 geomean.
2000W0034J Blackberry Cr. at Rt. 687 Bridge - 8/21 instant; 2/2 geomean.
2000W0034L Blackberry Cr. at Microfilm Road - 7/26 instant; 1/2 geomean.

Fact Sheets for Category 5 Waters

2000W0034M UT (unnamed tributary) above confluence w/Blackberry Cr. - 1/24 instant; 0/1 geomean.
2000W0034O Blackberry Cr., UT below Westwood Lagoon - 19/24 instant; 1/1 geomean.
2000W0034P Blackberry Cr., UT immediately above Westwood Lagoon - 11/25 instant; 1/1 geomean.
2000W0034R Blackberry Cr. along Rt. 779 - 15/24 instant; 1/1 geomean.
2000W0034S Blackberry Cr., UT above Rt. 832 Bridge - 4/15 instant; 1/1 geomean.
2000W0034T Blackberry Cr., UT above Westwood Rt. 1226 - 7/19 instant; 0/1 geomean.
2000W0034U Blackberry Cr., UT below Westwood Lagoon - 14/19 instant.
2000W0034V Blackberry Cr., UT below Westwood Lagoon - 11/19 instant.

Escherichia coli (E. coli) bacteria results:

2000W0034C Blackberry Cr. at Rt. 57A Bridge - 5/21 instant.
2000W0034E Blackberry Cr. American Legion Bridge - 7/20 instant.
4ABRY000.05 - None collected.
2000W0034F Blackberry Cr. above Rt. 698 Bridge - 10/21 instant.
2000W0034G Blackberry Cr. at Rt. 676 Bridge - 2/20 instant.
2000W0034H Blackberry Cr. at end of Rt. 677 - 3/20 instant.
2000W0034I Blackberry Cr. at Rt. 832 Bridge - 7/21 instant.
2000W0034J Blackberry Cr. at Rt. 687 Bridge - 5/15 instant.
2000W0034L Blackberry Cr. at Microfilm Road - 8/19 instant.
2000W0034M UT (unnamed tributary) above confluence w/Blackberry Cr. - 1/19 instant.
2000W0034O Blackberry Cr., UT below Westwood Lagoon - 12/19 instant.
2000W0034P Blackberry Cr., UT immediately above Westwood Lagoon - 7/20 instant.
2000W0034R Blackberry Cr. along Rt. 779 - 8/20 instant.
2000W0034S Blackberry Cr., UT above Rt. 832 Bridge - 1/11 instant.
2000W0034T Blackberry Cr., UT above Westwood Rt. 1226 - 6/15 instant.
2000W0034U Blackberry Cr., UT below Westwood Lagoon - 9/19 instant.
2000W0034V Blackberry Cr., UT below Westwood Lagoon - 8/19 instant.

IMPAIRMENT SOURCE: PS / NPS - Urban

Recreational Use

The source of fecal coliform bacteria is believed to be mainly from minor municipal point sources and urban (residential) nonpoint source runoff. There is only minimal agricultural activity in the drainage.

The Henry County Public Service Authority (Receiver) has taken over the operation of former privately held treatment works in the drainage. Application for a Rural Housing Authority Grant for interceptor construction has been made. Interceptor construction in the drainage will remove most of the existing small treatment works outfalls. Construction originally anticipated to begin in the fall of 2002 has been delayed due to easement acquisition.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Henry
STREAM NAME: Smith River
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L53R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 6.95 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016

UPSTREAM LIMIT:

DESCRIPTION: Reed Creek mouth on Smith R.
RIVER MILE: 34.57
LATITUDE: 36.72133 **LONGITUDE:** -79.94012

DOWNSTREAM LIMIT:

DESCRIPTION: Backwaters of Martinsville Power Dam
RIVER MILE: 27.62
LATITUDE: 36.65960 **LONGITUDE:** -79.89062

The segment starts at the mouth of Reed Creek on the Smith River and extends downstream to the former E. I. duPont outfall on the Smith River (backwaters of the Martinsville Power Dam). The entire segment is on the Martinsville West Quad.

Note: Station river mile incompatibility exists in Smith River station identifiers. Beginning and ending river miles are relative to the stations located within the segment.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4ASRE033.19 located on the Route 701 Bridge in Fieldale finds nine of 59 fecal coliform bacteria observations in excess of the 400 cfu/100 ml instantaneous criterion. Exceeding values range from 500 cfu/100 ml to greater than 8000. The recreational use is not supported as a result.

IMPAIRMENT SOURCE: NPS - Urban

Recreational Use

Urban nonpoint source runoff is believed to be the source of the impairment.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Henry, Martinsville
STREAM NAME: Smith River
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L54R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 13.77 - Miles
INITIAL LISTING: 1998 **TMDL SCHEDULE:** 2010

UPSTREAM LIMIT:

DESCRIPTION: Martinsville Dam
RIVER MILE: 25.11
LATITUDE: 36.66444 **LONGITUDE:** -79.88361

DOWNSTREAM LIMIT:

DESCRIPTION: Turkey Pen Br. mouth on the Smith R.
RIVER MILE: 11.34
LATITUDE: 36.56684 **LONGITUDE:** -79.77867

The segment begins at the Martinsville Dam (Martinsville West Quad) and extends downstream to the mouth of Turkey Pen Branch on the Northwest Eden Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting, Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria (2002), General Standard (Benthic 1998)

Recreational Use

Station 4ASRE022.71 is a 1999 Federal Consent Decree Attachment B station and was not 2002 listed as impaired. Only four of 59 samples exceed the former 1000 cfu/100 ml instantaneous criterion or an exceedance rate of 6 percent in 2002.

Station 4ASRE022.71 (Footbridge above the Martinsville STP) shows in 2004 nonsupport of the recreational use from 41 samples with eight exceedances of the current 400 cfu/100 ml instantaneous criterion. Exceeding values range from 500 to greater than 8000 cfu/100 ml. An additional 3.59 miles are added to the 2002 303(d) Listing as a result.

Stations 4ASRE021.58 (Rt. 58 Bypass Bridge, Henry Co.) and 4ASRE015.43 (Rt. 636 Bridge) both record fecal coliform bacteria exceedances of the former instantaneous criterion (2002) of 1000 n/100 ml and the current 400 cfu/100 ml instantaneous criterion (2004). Each station 4ASRE021.58 and 4ASRE015.43 find six of 35 samples exceeding the current 400 cfu/100 ml instantaneous criterion. The range of exceedance for 4ASRE021.58 is from 600 to greater than 8000 cfu/100 ml. And from 500 to 1300 cfu/100 ml at 4ASRE015.43.

Aquatic Life Use

4ASRE026.04 (below Martinsville Dam formerly coded 4ASRE026.38) and 4ASRE015.43 (Rt. 636 Bridge) both find slight or no impairment to the benthic community from Rapid Biological Protocol II (RBP II) methods. However the entire 1998 303(d) Listed segment remains impaired as data are insufficient for de-listing two portions of the Smith for contravention of the General Standard. A minimum of two consecutive RBP II surveys crossing seasons must show no impairment to the biota.

Insufficient data do not allow a partial delisting of an upper 3.59 mile portion or a lower 4.76 mile portion of the Smith River. RBP II surveys at 4ASRE026.04 indicate loss of substrate due to hydrologic operations upstream of the site resulting in slight impairment. Three of four surveys show only slight impairment. The Martinsville Dam affects the river by periodically causing some of the stream substrate to become dewatered, thus reducing the amount of habitat available for benthic macroinvertebrate production. The Dam also affects water quality by

Fact Sheets for Category 5 Waters

releasing water that is higher in temperature and lower in oxygen than it would be without the impoundment.

Station 4ASRE015.43 located on the downstream end of the original 1998 segment provides improved results as well. Three of four RBP II surveys find no impairment (2 Fall surveys 2000 and 2001) and one slight impairment to the benthic community in fall 1999. The benthic community in spring 1999 showed signs of recovery finding the best Family Biotic Index (metric based on the pollution tolerance of taxa) score at this station for the five-year assessment window (1998-2002).

RBP II surveys find the benthic community moderately impacted causing nonsupport of the aquatic life use representing 5.42 miles of the overall 13.77 mile 1998 segment. This portion of the Smith River incorporates Rapid Biological Assessment Protocol II (RBP II) stations 4ASRE22.30 (below the Martinsville STP), 4ASRE019.00 (above the Marrowbone Creek mouth). A 1998 Corbicula study indicate that chlorides may have an impact on the benthos. Chlorides have been greatly reduced as a result of plant closings in the area since the 1998 study.

Industrial plant closings in the Martinsville / Henry County area have resulted in the closure of the Upper Smith River Henry County PSA wastewater treatment facility. Wastewater will be transported to the Martinsville STP. Greatly reduced influent chloride levels from industrial inputs to the Martinsville STP are anticipated with subsequent reductions of chlorides in the effluent. Improved benthic conditions are anticipated as a result.

IMPAIRMENT SOURCE: NPS - Urban, PS / NPS - Urban, Power Dam Releases

Recreational Use

Urban nonpoint source runoff is the believed source of the fecal coliform bacteria impairment.

Aquatic Life Use

The source of the benthic impairment is believed to be a mix of municipal point source and possible urban nonpoint source runoff.

Releases from or lack of releases from Hydrostructures upstream cause dewatering or scouring immediately downstream affecting habitat.

Large reductions in industrial wastewater treated at the Martinsville STP and Henry County Lower Smith River STP are the result of plant closings. Wastewater from the former Upper Smith River facility are now flowing to the Martinsville City wastewater treatment facility. Improving benthic conditions are anticipated as a result.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Henry
STREAM NAME: Marrowbone Creek
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L55R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 4.33 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2010

UPSTREAM LIMIT:

DESCRIPTION: Henry Co. PSA WTP
RIVER MILE: 4.33
LATITUDE: 36.60306 **LONGITUDE:** -79.87113

DOWNSTREAM LIMIT:

DESCRIPTION: Marrowbone Cr. mouth on Smith R.
RIVER MILE: 0.00
LATITUDE: 36.61333 **LONGITUDE:** -79.82277

This segment begins at the Henry County PSA Water Treatment Plant on Marrowbone Creek and extends downstream to Marrowbone Creek's mouth on the Smith River. The entire segment is on the Northwest Eden Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4AMRR000.02 is a 1999 Federal Consent Decree Attachment B station. The segment is 2002 303(d) listed for fecal coliform bacteria where five of 23 samples exceed the former 1000 cfu/100 ml instantaneous criterion (1996 to 2000 data window).

Four of 29 observations exceed the current fecal coliform bacteria instantaneous criterion of 400 n/100 ml at 4AMRR000.02 (Rt. 642 Bridge). The range of exceeding values is 2000 to greater than 8000 cfu/100 ml. The recreational use is not supported.

IMPAIRMENT SOURCE: NPS - Urban

Recreational Use

The source of fecal coliform bacteria is believed to be urban nonpoint source runoff.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Henry
STREAM NAME: Leatherwood Creek
HYDROLOGIC UNIT: 03010103
TMDL ID: VAW-L56R-01
ASSESSMENT CATEGORY: 5A
SEGMENT SIZE: 8.34 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2010

UPSTREAM LIMIT:

DESCRIPTION: Martinsville intake.
RIVER MILE: 8.34
LATITUDE: 36.68167 **LONGITUDE:** -79.77945

DOWNSTREAM LIMIT:

DESCRIPTION: Leatherwood Cr. mouth on Smith R.
RIVER MILE: 0.00
LATITUDE: 36.61444 **LONGITUDE:** -79.79188

This segment begins at the Martinsville City intake on Leatherwood Creek and extends downstream to the mouth of Leatherwood Creek on the Smith River. The segment spans the Martinsville East and Northwest Eden Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Recreation Use - Not Supporting

IMPAIRMENT CAUSE: Bacteria

Recreational Use

Station 4ALWD002.54 is a 1999 Federal Consent Decree Attachment B station. The segment is 2002 303(d) listed for fecal coliform bacteria where three of 23 samples exceed the former 1000 cfu/100 ml instantaneous criterion (1996 to 2000 data window).

Exceedances of the fecal coliform bacteria instantaneous criterion are found at station 4ALWD002.54. Three of 18 observations exceed the current 400 cfu/100 ml instantaneous criterion. Exceeding values range from 600 to 6200 cfu/100 ml. The station is located at the Rt. 650 Bridge in Henry County.

IMPAIRMENT SOURCE: NPS - Agriculture / Urban

Recreational Use

The source of fecal coliform bacteria is believed to be a mix of urban and agricultural nonpoint source runoff. Wildlife contributions are also possible.

Fact Sheets for Category 5 Waters

RIVER BASIN: Roanoke/Yadkin River Basins
CITY/COUNTY: Carroll
STREAM NAME: Lovills Creek
HYDROLOGIC UNIT: 03040101
TMDL ID: VAW-M02R-01N
ASSESSMENT CATEGORY: 5C
SEGMENT SIZE: 1.79 - Miles
INITIAL LISTING: 2002 **TMDL SCHEDULE:** 2014

UPSTREAM LIMIT:

DESCRIPTION: Above the Route 686 crossing.
RIVER MILE: 9.08
LATITUDE: 36.57556 **LONGITUDE:** -80.63907

DOWNSTREAM LIMIT:

DESCRIPTION: VA / NC State Line.
RIVER MILE: 7.29
LATITUDE: 36.55833 **LONGITUDE:** -80.63318

Lovills Creek mainstem from just above the Route 686 crossing downstream to the VA / NC State Line.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: Temperature

Aquatic Life Use

Four of 14 temperature measurements at station 4BLOV007.92 (Rt. 687 Bridge Off Rt. 686 at Cana) exceed the 21°C WQS Class V (stockable trout water) criterion. Exceeding temperature values range from 23 to 25°C (Category 5C).

IMPAIRMENT SOURCE: Unknown

Aquatic Life Use

The water temperature exceedances are believed due to natural conditions. There are no known sources of heat other than natural solar radiation.